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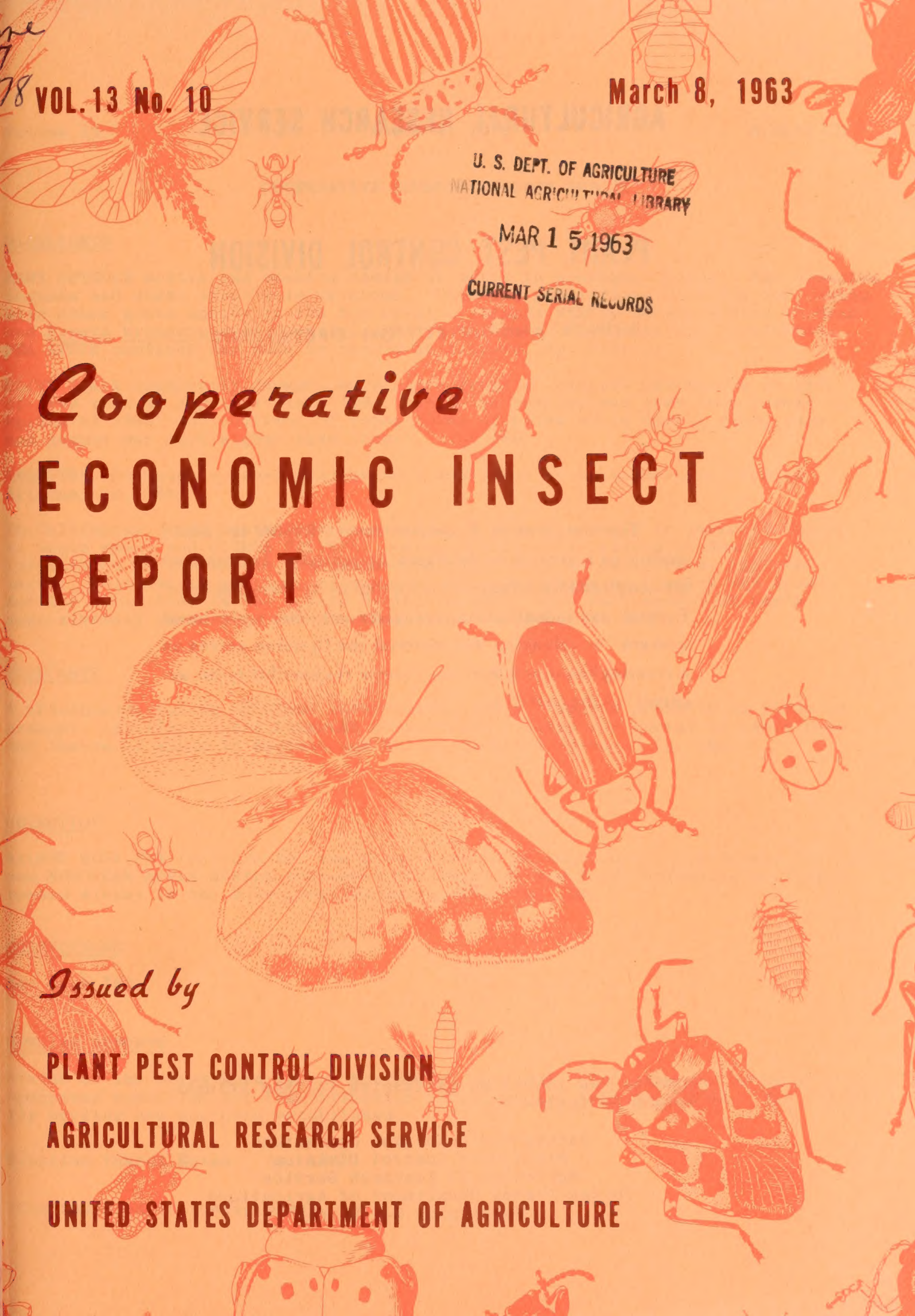
Cooperative ECONOMIC INSECT REPORT



Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Survey and Detection Operations
Plant Pest Control Division
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Volume 13 March 8, 1963 Number 10

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

ARMY CUTWORM active and causing damage to wheat in southwest Kansas, and damaging legumes and wheat locally in Oklahoma. GREENBUG populations continue low, along with other grain aphids in the Southwest. ALFALFA WEEVIL adults active in Utah, and *Hypera brunneipennis* damaging alfalfa in areas of Arizona and California. PEA APHID controls may soon be needed in Arizona. (p. 179).

OLIVE SCALE apparently damaged more olive fruit in central California in fall of 1962 than at any time since 1954. Parasite buildup was less than normal in spring of 1962, and survival of young forms of olive scale during June, July and August was much higher than normal. (p. 180).

TERMITES continue to cause considerable annoyance to homeowners in central Arizona. (p. 184).

In California, BEET LEAFHOPPER treatments on desert annuals in Imperial Valley to begin soon, and CITRUS WHITEFLY survey continues to extend boundaries of infestation in Sacramento, Sacramento County. Also in California, eggs and larvae, believed to be those of the scarab (*Ceratophyus* sp.) which was found for the first time in the United States in 1962, were recovered from nests approximately three feet beneath the ground surface. (p. 184).

FORECASTS

A widespread, spring GREENBUG infestation does not appear probable in Texas at present. (p. 179). LEAF CRUMPLER constitutes a potential threat to early buds and leaves of apple in Kaufman and Dallas Counties, Texas. (p. 180).

DETECTION

WALNUT HUSK FLY recorded for the first time in Solano County, California (p. 180); and EUROPEAN APPLE SAWFLY increased its range in New York, spreading northward toward Albany in the Hudson Valley during 1962 (p. 194).

CORRECTIONS

See page 185.

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 182). Only four screw-worm specimens submitted for identification during period February 17-23. The sterile fly barrier has now been established.

Hawaiian Insect Notes. (p. 186).

(Continued on following page)

Summary of Insect Conditions in the United States - 1962

Fruit Insects
- Pome Fruit Insects - (p. 188).
- Stone Fruit Insects - (p. 197).
- General Deciduous Fruit Insects - (p. 202).
- Nut Crop Insects - (p. 203).
- Grape Insects - (p. 205).
- Blueberry, Cranberry, Currant and Gooseberry Insects - (p. 207).
- Avocado Insects - (p. 207).
- Fig Insects - (p. 208).
- Citrus Insects - (p. 208).

Reports in this issue are for week ending March 1, unless otherwise indicated.

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WEATHER BUREAU 30-DAY OUTLOOK

MARCH 1963

The Weather Bureau's 30-day outlook for March calls for an appreciable moderation over the eastern half of the Nation, with temperatures averaging from ten to fifteen degrees higher than in February. Part of this trend will be due to seasonal adjustment and part to a change in expected departures from normal. However, temperatures are expected to average somewhat below seasonal normals over the northeast quadrant of the country and also in the Far Southwest. Above-normal temperatures are indicated for the West Coast States, and also for the northern and central Plains. In unspecified areas, about normal temperatures are anticipated. Precipitation is expected to exceed normal in the South and along the Atlantic seaboard as well as over the Pacific Northwest. Subnormal amounts are expected from the Great Lakes westward to the Continental Divide and also in the Far Southwest. Otherwise, near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING MARCH 4

As representative of their areas, Pennsylvania registered its seventh consecutive week of below-normal temperatures, and this was the fourth successive week of generally above-normal averages in Oregon. Proof of this winter's extremes can be seen in such reports as Lake Michigan being frozen clear across from Milwaukee, Wisconsin, to Muskegon, Michigan, for the first time in 27 years, and the mountain snowpack of the Far West being below normal due to a combination of unseasonable warmth and little precipitation.

East of the Plains States, temperature averages were mostly below normal, with Indianapolis, Indiana, having the largest reported deficiency of 17°. An early-in-the-week cold snap was enough to offset spring-like warming during the latter half of the period. New daily lows were set at many stations in the Great Lakes and East Coast States on the 26th and 27th. On Tuesday, a -22° minimum at Springfield, Illinois, was also a new record for February.

(Weather continued on page 185)

CEREAL AND FORAGE INSECTS

ARMY CUTWORM (Chorizagrotis auxiliaris) - KANSAS - Found in all wheat fields examined in Meade County, southwest; ranged 1-9 per square foot. Larvae ranged small to medium in size, with most being small. Reported damaging wheat in Gray County, southwest. (DePew). Counts ranged 1-9 per foot of row in wheat in Hodgeman County, southwest. Some reports of treatments having been applied. (Peters). OKLAHOMA - Heavy populations of 15 per linear foot noted causing some damage to legumes in isolated spot in Garfield County. Heavy populations also reported causing some damage to wheat in localized area of Harper County. (Okla. Coop. Sur.).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - ARKANSAS - Survival of overwintering larvae 2 percent in field of corn in Cross County, east central. This field was very late corn in 1962 and originally 90 percent infested with overwintering larvae. (Ark. Ins. Sur.).

GREENBUG (Schizaphis graminum*) - TEXAS - During period January 28 to February 20, survey made in following 27 northwest counties: Randall, Deaf Smith, Parmer, Castro, Oldham, Potter, Swisher, Briscoe, Floyd, Hale, Armstrong, Childress, Hardeman, Wilbarger, Wichita, Taylor, Jones, Stonewall, Kent, Dickens, Crosby, Hutchinson, Hansford, Ochiltree, Gray, Roberts and Carson. Greenbug not found in Childress, Hardeman, Hutchinson, Hansford, Ochiltree, Gray, Roberts and Carson Counties. Populations generally low in other 19 counties; ranged from less than one to 10 per linear foot. Highest count taken in Parmer County; one field infested with up to 25 per linear foot. Recent extended cold weather lowered populations considerably. During first part of January, some fields in Parmer, Deaf Smith and Castro Counties had as many as 200 per linear foot; however, populations currently much lower. Foliage of wheat in panhandle area dry and brown from recent cold weather; however, plants generally green at ground level and not showing much winter kill as yet; but, with these conditions, food available to greenbug should be scarce for a period and probably prevent rapid buildup. A widespread, spring greenbug infestation does not appear probable at present. (Daniels). ARKANSAS - Few fields of small grain infested during fall of 1962 found to have low populations at present time. Ranged 1-2 per linear foot. (Ark. Ins. Sur.). ALABAMA - Medium infestations of 7-10 per plant observed on approximately 450 acres of pasture in Tallapoosa County. (Barwood).

GRAIN APHIDS - OKLAHOMA - Populations of GREENBUG (Schizaphis graminum*), ENGLISH GRAIN APHID (Macrosiphum avenae*), APPLE GRAIN APHID (Rhopalosiphum fitchii) and CORN LEAF APHID (R. maidis) remain at noneconomic levels throughout State, with negative reports continuing from many areas. Some plant recovery has begun as temperatures begin to moderate. Extensive winter kill of barley and oats is reported. (Okla. Coop. Sur.).

ALFALFA WEEVILS (Hypera spp.) - CALIFORNIA - H. brunneipennis medium to heavy on alfalfa in Edna area, San Luis Obispo County. Larvae and adults of Hypera sp., probably postica, heavy on alfalfa in Salinas, Monterey County. (Cal. Coop. Rpt.). ARIZONA - H. brunneipennis infesting alfalfa in some areas of Maricopa County. (Ariz. Coop. Sur.). UTAH - H. postica adults active in Duchesne area, Duchesne County. (Knowlton).

PEA APHID (Acyrthosiphon pisum*) - ARIZONA - Causing some injury to alfalfa in some areas of Maricopa and Pinal Counties. Controls may soon be needed. (Ariz. Coop. Sur.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Small numbers appearing in some fields of alfalfa. (Ariz. Coop. Sur.).

* See CEIR 13(5):84

CLOVER MITE (*Bryobia praetiosa*) - ARIZONA - Present in some alfalfa fields in Phoenix and Yuma areas. (Ariz. Coop. Sur.).

SPIDER MITES - ALABAMA - Undetermined species ranged medium to heavy (2-7 per leaflet) on approximately 500 acres of vetch in Tallapoosa County. (Barwood).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Appearing on safflower. (Ariz. Coop. Sur.).

FRUIT INSECTS

LEAF CRUMBPLER (*Acrobasis indigenella*) - TEXAS - Overwintering larvae very common on apple twigs in Kaufman and Dallas Counties and constitute potential threat to early buds and leaves. (Lewis, Newton).

APPLE TWIG BORER (*Amphicerus bicaudatus*) - TEXAS - Overwintering adults very common in twig axils in mixed orchard of pecan, apple and pear trees in Garza County. (Conner).

AN ARMORED SCALE (*Aspidiotus lataniae*) - FLORIDA - Moderately infested loquat (*Eriobotrya* sp.) at Pierson (Jan. 29) and at De Leon Springs (Jan. 30), Volusia County. (Fla. Coop. Sur.).

PEACH SILVER MITE (*Aculus cornutus*) - CALIFORNIA - Heavy on dooryard nectarines in Sacramento, Sacramento County. At present, a few leaf buds have been deformed; this is first observation of bud damage in peaches. Normal and reported damage is of 3 other types: Spring, longitudinal leaf rolling (upward) on glandless leaves; spring yellow spotting on glandless leaves; summer and fall silvering of leaves. Specimens involved in this bud damage were overwintering females in deutogyne stage. Deutogenes overwinter back of the buds, not in them. (Cal. Coop. Rpt.).

WALNUT HUSK FLY (*Rhagoletis completa*) - CALIFORNIA - Specimens collected in traps during late summer of 1962 in walnut trees in Fairfield, Solano County. This new county record includes Solano County in the infested area and fills in the section between San Joaquin and Napa Counties, where this fly has been known to occur for several years. Natural spread probably accounted for several of the infested counties rather than other types of introduction. This species is now causing commercial damage in northern part of State. (Cal. Coop. Rpt.).

OLIVE SCALE (*Parlatoria oleae*) - CALIFORNIA - Apparently damaged more olive fruit in central part of State in fall of 1962 than any time since 1954. Orchards on regular control program affected as well as those dependent upon biological control. Lack of parasites is attributed to abnormally severe and prolonged high temperatures during summer of 1961, followed by unusually mild spring and summer temperatures of 1962. *Aphytis* parasites, which usually control *P. oleae*, were reduced in numbers by high temperatures of 1961. This resulted in less than normal parasite buildup in spring of 1962. Mild spring and summer temperatures in 1962 favored a much higher than normal survival of young forms of *P. oleae* during June, July and August, at which time the parasites are normally ineffective in controlling the scale. *P. oleae* populations exploded during the August-September reproductive period. Mild summer weather favored both scale and parasite development, with an increase in the scale population; however, benefit of the parasite will not be evident until spring of 1963, when a much higher degree of control should result. *Aphytis* parasites are very effective on overwintering scales. A more recently introduced parasite, *Coccophagoides* sp., can tolerate the hot summer weather in the State. The 2 parasites together have given excellent control in a limited number of orchards where *Coccophagoides* has colonized. During 1962, more than 2 million *Coccophagoides* were released in olive scale areas over the State and large numbers will be released during 1963. Some time will be required to reestablish a favorable biological balance. (C. B. Huffake, C. E. Kennett, K. W. Opitz, Ext. Serv.).

TRUCK CROP INSECTS

POPLAR PETIOLE GALL APHID (*Pemphigus populitransversus*) - TEXAS - Continues to cause damage to cabbage roots in lower Rio Grande Valley. Estimated 75 percent of fields in southern half of area have economic infestations. (Garner).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - General on lettuce in the Salt River Valley; controls underway. Also appearing on sugar beets grown for seed. (Ariz. Coop. Sur.).

BEET ARMYWORM (*Spodoptera exigua*) - ARIZONA - Continues to appear where controls not practiced on lettuce; also appearing on several other vegetable crops. (Ariz. Coop. Sur.).

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Continues to appear on lettuce where no controls are applied. Also appearing on other vegetable crops. (Ariz. Coop. Sur.).

COTTON INSECTS

PINK BOLLWORM (*Pectinophora gossypiella*) - FLORIDA - Collections made from wild cotton at Cape Sable, Monroe County, Feb. 11. Det. by W. Breidenbach. (Fla. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

A JUNIPER TWIG MOTH (*Periploca nigra*) - CALIFORNIA - Heavy locally on juniper (*Juniperus* sp.) in El Cajon, San Diego County. (Cal. Coop. Rpt.).

BEET ARMYWORM (*Spodoptera exigua*) - FLORIDA - This species and CABBAGE LOOPER (*Trichoplusia ni*) light on 800 chrysanthemum plants at Punta Gorda, Charlotte County (Feb. 18). (Fla. Coop. Sur.).

SPRING CANKERWORM (*Paleacrita vernata*) - KANSAS - Male moths numerous in blacklight trap in Riley County, northeast. (Peters).

Coccids in Florida - *Aspidiotus perniciosus* severely infested 100 pear trees (*Pyrus* sp.) at Jacksonville, Duval County (Feb. 11). *Fiorinia theae* severely infested 116 *Camellia japonica* at Jacksonville, Duval County (Feb. 11), and 10 plants at Seffner, Hillsborough County (Feb. 12); also ranged light to severe on *Camellia* spp. at Hialeah, Dade County (Feb. 15), at Cocoa, Brevard County (Feb. 19), at Fairvilla, Orange County (Feb. 21), and at De Land, Volusia County (Feb. 21). *Antonina bambusae* and *Odonaspis penicillata* were moderate on 100 bamboo plants at Pembroke, Polk County (Feb. 21). *Ferrisia virgata* was moderate on 10 *Codiaeum* sp. at De Land (Feb. 21). *Howardia biclavis* was light on *Camellia japonica* at Hialeah (Feb. 15) and severe on *Ixora* sp. at Largo, Pinellas County (Feb. 22). *Phenacaspis cockerelli* was moderate on *Magnolia* sp. and *Strelitzia reginae* at Bradenton, Manatee County (Feb. 19), and light on *Michelia fuscata* at Fairvilla (Feb. 21). *Pinnaspis aspidistrae* infested 100 *Aspidistra* sp. at Pembroke (Feb. 21). *Pinnaspis strachani* was moderate to severe on *Citrus sinensis* at Cocoa (Feb. 19). *Pseudaulacaspis pentagona* was moderate on 200 *Allamanda* sp. at Miami, Dade County (Feb. 15). *Pseudaonidia duplex* was severe on *Camellia* sp. at De Land (Feb. 19). *Aspidiotus juglansregiae* was moderate on *Ilex* sp. at Tampa, Hillsborough County (Feb. 20). *Unaspis citri* severely infested *Citrus sinensis* at Sanford, Seminole County (Feb. 22), and was light on *C. sinensis*, *C. paradisi*, and *C. aurantius* at Ocoee, Orange County (Feb. 25). (Fla. Coop. Sur.).

Coccids in California - Medium populations of BARNACLE SCALE (*Ceroplastes cirripediformis*) occurring locally on privet in Riverside, Riverside County. Medium population of *Aspidiotus degeneratus* present on camellias in Madera, Madera County. (Cal. Coop. Rpt.).

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Still appearing on roses and many annuals in central portion of State. (Ariz. Coop. Sur.).

CHRYSANTHEMUM LACE BUG (*Corythucha marmorata*) - FLORIDA - Severe on crownbeard (*Verbesina* sp.) at Lauderdale-by-the-Sea, Broward County (Jan. 30). Det. by R. F. Hussey. (Fla. Coop. Sur.).

CLOVER MITE (*Bryobia praetiosa*) - CALIFORNIA - Medium on small-leaf English ivy in San Luis Obispo, San Luis Obispo County. (Cal. Coop. Rpt.).

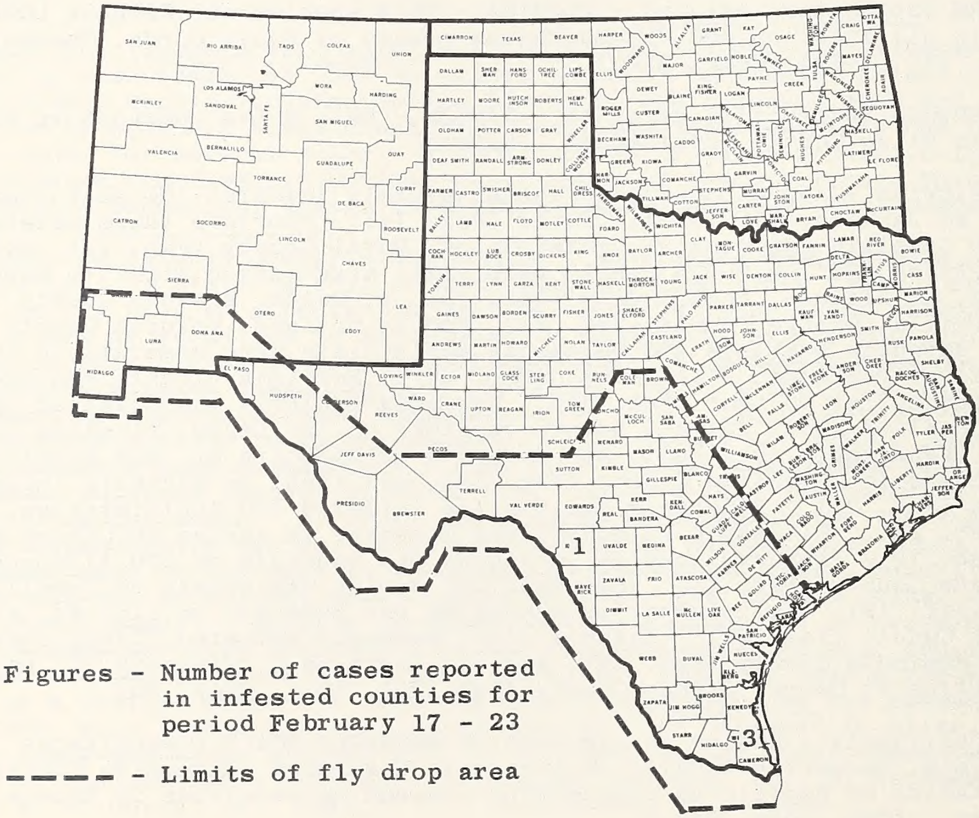
A TARSONEMID MITE (*Tarsonemus confusus*) - FLORIDA - Severely infested 50 arborvitae trees (*Thuja* sp.) at Winter Haven, Polk County (Jan. 18). (Fla. Coop. Sur.).

INSECTS AFFECTING MAN AND ANIMALS

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

Only 4 screw-worm specimens submitted for identification during period February 17-23 from Willacy and Kinney Counties, Texas. Animals on these premises and adjoining ranches have been sprayed. "Hotspot" treatment by plane and automobile was begun immediately.

The sterile fly barrier has now been established and is being flown weekly, 25 miles deep into Mexico from the Gulf of Mexico to 25 miles west of the New Mexico-Arizona border. Two additional areas, where climate or heavy livestock populations favor screw-worm propagation, receiving flies in zone reaching 50 miles into Mexico. First of these areas is in region south of Brownsville, Texas, and other is in region immediately southwest of the Del Rio-Eagle Pass area. A total of 77,956,250 sterile screw-worm flies was released during the period February 17-23. (Anim. Dis. Erad. Div.).



Figures - Number of cases reported in infested counties for period February 17 - 23

▬ ▬ ▬ ▬ - Limits of fly drop area

CATTLE GRUBS (Hypoderma spp.) - OKLAHOMA - Counts of H. lineatum declining in Stillwater area, Payne County; ranged 0-6 (average 1.5) per head. (Okla. Coop. Sur.). NEW MEXICO - Larvae of H. lineatum abundant in backs of cattle in some Curry County herds. (N. M. Coop. Rpt.). UTAH - Hypoderma spp. infesting several herds of cattle in Garfield, Piute, Wayne and Sevier Counties. (Knowlton).

CATTLE LICE - IOWA - May be of great significance in feedlots until occurrence of warmer weather. (Iowa Ins. Inf., Feb. 18). UTAH - Infesting several beef herds in Garfield, Piute, Wayne and Sevier Counties. (Knowlton). Infestations serious on many cattle herds in Duchesne County. (Knowlton, Smith). OKLAHOMA - Light to moderate activity by several species continues throughout State; light numbers of Linognathus vituli (1 per hair part) noted on yearling calves in Stillwater area, Payne County. (Okla. Coop. Sur.).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Activity continues over State, with moderate populations observed in Pawnee County area. (Okla. Coop. Sur.).

LICE - ARIZONA - Apparently very common on sheep grazing in Salt River Valley. Also reported on many livestock in many portions of State. (Ariz. Coop. Sur.).

CHICKEN BODY LOUSE (Menacanthus stramineus) - OKLAHOMA - Heavy infestations noted on chickens in Pawnee County. (Okla. Coop. Sur.).

FLEAS (Ctenocephalides spp.) - OKLAHOMA - Causing concern around several homes in Stillwater area, Payne County. (Okla. Coop. Sur.).

WINTER TICK (Dermacentor albipictus) - TEXAS - Controls underway on cattle at some ranches in Throckmorton County. No counts given. (Newton).

BROWN DOG TICK (Rhipicephalus sanguineus) - MARYLAND - Engorged females found on dog and nymphs found about premises of home in Baltimore. Engorged female also found in home at Phoenix, Baltimore County. (U. Md., Ent. Dept.).

HOUSEHOLD AND STRUCTURAL INSECTS

SPIDER BEETLES (Ptinus spp.) - CALIFORNIA - Medium populations of P. clavipes and P. ocellus present in Merced, Merced County, and in Eureka, Humboldt County. Several occurrences reported during past several weeks, which is more than normal. (Cal. Coop. Rpt.).

BLACK CARPET BEETLE (Attagenus piceus) - MARYLAND - Found in home at Lutherville, Baltimore County. (U. Md., Ent. Dept.).

CIGARETTE BEETLE (Lasioderma serricorne) - FLORIDA - Light in cereal in kitchen at Gulf Breeze, Santa Rosa County (Feb. 13). (Boyd).

A PSYLLID (Pachypsylla celtidisvesicula) - OKLAHOMA - Continues to cause some concern in Oklahoma City, Tulsa and Bartlesville areas. (Okla. Coop. Sur.).

COCKROACHES - CONNECTICUT - One infestation each of Blatta orientalis and Blattella germanica reported in homes during February. (Johnson, Savos). MARYLAND - Blattella germanica infested home at Lutherville, Baltimore County. (U. Md., Ent. Dept.). UTAH - Unspecified species infested several homes and other buildings at Moab, Grand County, and at Duchesne, Duchesne County. (Knowlton).

BLACK CARPENTER ANT (Camponotus pennsylvanicus) - CONNECTICUT - Reported active on 10 separate occasions during February. (Johnson, Savos). PENNSYLVANIA - Numerous in homes at Philadelphia, Allegheny County, and at Altoona, Blair County. (Adams).

PAVEMENT ANT (Tetramorium caespitum) - PENNSYLVANIA - Numerous in home at Pittsburgh, Allegheny County, February 18. (Udine).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - Present in homes in Yuma and Phoenix areas. (Ariz. Coop. Sur.). UTAH - Moderate numbers moved into several homes in Salt Lake County recently. (Knowlton).

TERMITES - CONNECTICUT - Reticulitermes flavipes reported on 5 occasions during February. (Johnson, Savos). NEW MEXICO - Winged forms of an undetermined species noted flying in fields and around farms in Curry County. (N. M. Coop. Rpt.). ARIZONA - Unspecified species continue to cause considerable annoyance to many homeowners in central area. (Ariz. Coop. Sur.).

STORED-PRODUCT INSECTS

HIDE BEETLE (Dermestes maculatus) - ALABAMA - Medium infestation observed on imported fishmeal; approximately 178,000 one-pound bags infested. (Seibels).

RICE WEEVIL (Sitophilus oryzae) - ALABAMA - Moderate to heavy on stored corn in Tallapoosa County. Populations extremely heavy where shucks were split, allowing free entry. (Buttram).

SAW-TOOTHED GRAIN BEETLE (Oryzaephilus surinamensis) - PENNSYLVANIA - Numerous in home at Mill Hall, Clinton County, and in cereals in Centre County. (Adams).

TOBACCO INSECTS

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - GEORGIA - Feeding damage light on tobacco in the plant bed in several southern counties. (Johnson).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Feeding damage light on tobacco in the plant bed in several southern counties. (Johnson).

MISCELLANEOUS INSECTS

BEET LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Mapping of desert annuals on west side of Imperial Valley, Imperial County, concluded, with more than 20,000 acres recorded. Nymphs averaging 2 per 10 sweeps found throughout much of area. It is anticipated that treatment to prevent damage to cultivated croplands will begin shortly. In the San Joaquin Valley, scattered, light populations occurred in restricted areas along foothills where winter vegetation was favorable. (Cal. Coop. Rpt.).

CITRUS WHITEFLY (Dialeurodes citri) - CALIFORNIA - Survey continues to extend boundaries of infestation in Sacramento, Sacramento County. To date, established pattern indicates definite "carry-outs" from infested area. Overall infested area now measures approximately 15 square miles, as infestations are in irregular pattern involving much larger area. Estimated involvement now approaching 1,000-block unit of treatment. Over 300 blocks treated to date; due to spring weather, trees and plants breaking dormancy rapidly. Additional equipment to be added in next 10 days. If weather remains favorable, treatment will be applied prior to emergence of whiteflies. (Cal. Coop. Rpt.).

A SCARAB (Ceratophyus sp.) - CALIFORNIA - Recently damaged lawns in model homes in Vanderburg Air Force Village, Santa Barbara County. Two cans baited with Japanese beetle bait (anethole-eugenol) captured 5 specimens; 2 cans using ammonium carbonate as bait caught 7 beetles. Eggs and larvae, believed to be this species, dug from nest approximately 3 feet beneath ground surface. Should these prove to be this beetle, they will be first obtained. Depths of nests this season, compared with 1962, are 6-8 feet and deeper than in 1962. Possibly moisture is a determining factor in depth of beetle mines. The fact that 1962 was excessively dry could account for the variation found at this time. (Cal. Coop. Rpt.).

TACHINA FLIES - NEW MEXICO - Unspecified species very abundant in many areas of Curry County. (N. M. Coop. Rpt.).

LIGHT TRAP COLLECTIONS

FLORIDA, Gainesville (Feb. 20) - No collections of economic importance.

GEORGIA, Tifton (Feb. 21-27) - No collections.

SOUTH CAROLINA, Charleston (Feb. 28-March 3) - ARMYWORM (Pseudaletia unipuncta) - 5; YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) - 1; SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - 1.

CORRECTION

CEIR 13(5):77 - Ornamental and Forest Insects: Third line - A PHYTOSEIID MITE (Phytoseiulus persimilis)* should read -"... occurred on violets in Tripolintania." This species is an important predator of spider mites.

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Weather of the week ending March 4 (continued from page 178)

Over the Great Plains and Far West, weekly averages were mostly above normal, with slightly below seasonal temperatures in the Utah-Colorado border area. The largest departures were in north-central Montana where Glasgow was 15° above normal for the week. A mid-April temperature of 67° was the high at Reno, Nevada, on the 28th, and maxima in southern Texas on the final day exceeded 90°, but general cooling was in effect over the Far West as the period came to a close.

Little or no precipitation fell from southern and western Texas westward across the southern two-thirds of California. Moderate to locally heavy snows fell in the Rockies late in the week from northern New Mexico into northwestern Wyoming. Amounts ranged to 9 inches in the extreme north of New Mexico, to 8 inches at Denver, Colorado, and to 10 inches at Rawlins, Wyoming, from a storm on the 3d which also produced 10 inches at Sidney, Nebraska. Lighter falls were reported from elsewhere in Nebraska, Iowa and northern Kansas. Several inches of new snow were added to the cover in the Cascade Mountains, but the precipitation fell as rain in the lower elevations of the Pacific Northwest, mostly on the 25th. Tatoosh Island, Washington, received 3.27 inches of rain for the week.

Major storm systems with attendant precipitation produced important rain and snow during most of the period over large areas from the Great Plains eastward. Rainfall totals over 1 inch covered an area from eastern Texas into southern Illinois and western Kentucky. Much of the Florida Peninsula had similar totals, as did northern Georgia.

Where the precipitation fell as snow, amounts were often heavy. Vincennes, Indiana, was covered with a 10-inch fall on the 1st. Like amounts were measured in all states to the north and east of Indiana. Boston, Massachusetts, had a 9-inch snowfall on the 2d, as 4 to 10 inches fell over most of southern interior of New England, and much of New York and Pennsylvania. (Summary supplied by U. S. Weather Bureau).

HAWAIIAN INSECT NOTES

The following notes were submitted by the Hawaiian Entomological Society and were extracted from the "Notes and Exhibitions" in the minutes of the January 14, 1963, and February 11, 1963, meetings.

A STINK BUG (Brochymena quadripustulata) was again observed at a farm in Lualualei Valley, Oahu, the location of the original find; a good number of adults were found under and in wooden boxes and cardboard cartons, under boards and paper fertilizer bags, and under a nearby mango tree. No nymphs were seen and none of the bugs were observed on plants. (N. L. H. Krauss, Jan. 14 notes). Dr. W. Mitchell reported that adults of this pentatomid bug have been found under eaves in an area 1-2 miles distant from the original find. (J Kim, Feb. 11 notes).

Two BILLBUGS (Sphenophorus venatus vestitus and S. cariosa) have become established in Hawaii during recent years, but little information is available concerning adult longevity. Adults of S. cariosa were collected in mid-August 1962 from around roots of nutgrass near Waipahu, Oahu. They have been kept in large test tubes and supplied biweekly with fresh nutgrass since their capture. The beetles were of undetermined age when caught, but only about one-third of the original colony has died. During this time, they have been observed to mate freely, and females have deposited viable eggs in succulent tissue just below the growing point of the nutgrass. Adults feed regularly and frequently upon this part of the nutgrass plant. Adults of S. venatus vestitus were collected on Molokai early in October 1962. They have been provided biweekly with split sections of young, green sugarcane stems upon which they feed regularly and in which they deposit viable eggs. (J. W. Beardsley, Jan. 14 notes).

The appearance of SOUTHERN GREEN STINK BUG (Nezara viridula) on windward Oahu was first reported from Waimanalo about 6 months ago, followed by reports of its presence at Kaneohe and Kaolua. On January 12, 1963, southern green stink bug was observed breeding on Asystasia coromandeliana at Lanikai, for a new locality record. On the basis of age levels observed, it appears that the bug has gone through one generation at this new locality. (C. J. Davis, Jan. 14 notes).

A specimen of a large SPIDER (Agriope sp.) was collected at Kailua, Oahu. Both the markings on the spider and the shape of an egg mass produced in the laboratory indicate that this is a species of Agriope that may be new to the State. (F. Bianchi, Feb. 11 notes).

Specimens of a WATER STRIDER (Halobates sericeus) were collected at the height of the recent Kona storm, January 31, on Diamond Head Beach. Many thousands had been washed above the high-water mark along a sector of beach about 150 feet long and had massed in depressions in the sand and under accumulations of seaweed. When kept in a jar partly filled with moist sand, they had shown no inclination to cannibalism and had lasted 5 days in good condition. (F. Bianchi, Feb. 11 notes).

A shipment of 1,080 adults of a COCCINELLID BEETLE (Hyperaspis trilineata) was received from Barbados. This shipment is to be the nucleus of a breeding program designed to establish the species in the State, where it is expected to assist in the control of pink and gray mealybugs of sugarcane. (F. Bianchi, Feb. 11 notes).

A PARASITIC TACHINA FLY (Trichopoda pennipes), introduced to control southern green stink bug (Nezara viridula), may possibly be established. Single eggs of the fly were attached to each of 5 adults of the stink bug collected February 4 in the Nuuanu area. The last release of the parasite in the Nuuanu area was made December 7, 1962. The life cycle of T. pennipes being approximately 4 weeks supports the evidence that the eggs were oviposited by second-generation flies. No adult flies were observed in the area. (J. Kim, Feb. 11 notes).

A survey in the Tantalus-Round Top area of Oahu indicates that the CARNIVOROUS SNAIL (Gonaxis quadrilateralis), released in 1957 for the control of the GIANT AFRICAN SNAIL (Achatina fulica), has become well established and widely scattered in an area of approximately 40-50 acres. (J. Kim, Feb. 11 notes).

SUMMARY OF INSECT CONDITIONS - 1962

(continued from page 175)

FRUIT INSECTS

Pome Fruit Insects

Highlights:

CODLING MOTH control was generally good during 1962. It was abundant in several Western States, but damage was largely restricted to unprotected trees. Populations were relatively low in 1962 in the Eastern States. RED-BANDED LEAF ROLLER was not a problem in 1962. FRUIT-TREE LEAF ROLLER was more abundant than usual in Utah, Wisconsin and several other States, but was generally well controlled. TARNISHED PLANT BUG caused unusually heavy injury in New York, and APPLE APHIDS were of some concern to growers in several States, but were controlled in most cases before injury occurred. PEAR PSYLLA was recorded in a number of California counties for the first time in 1962. EUROPEAN APPLE SAWFLY increased its range in New York, spreading northward toward Albany in the Hudson Valley. APPLE MAGGOT was more abundant than in 1961 in Wisconsin, Illinois, Ohio and Michigan, and home orchardists were troubled in several Northeastern States as well. Untreated orchards in Indiana were almost 100 percent infested, and commercial growers adjacent to such areas experienced difficulty in preventing oviposition in their fruits.

EUROPEAN RED MITE was a serious problem in most New York orchards and was the most important pest of apples in Pennsylvania. It was also severe in Vermont, New Hampshire and Massachusetts, and was a major pest in Virginia and North Carolina. European red mite was the most important pest of all fruits in Ohio and outbreak numbers occurred in Michigan. Other Midwestern States also experienced problems with this mite. TWO-SPOTTED SPIDER MITE was one of the main arthropod problems in Colorado, extremely prevalent in California and serious in pear orchards in Jackson County, Oregon, from early season to harvest. Another spider mite, Tetranychus mcdanieli, was the major apple pest in the Yakima Valley of Washington, with increasing resistance to the latest acaricides. Damage by this species was also heavy in areas of New Mexico. PEAR RUST MITE was serious in western New York, and some infestations were severe in Yuba, El Dorado and Placer Counties, California. The mite was also very damaging in several Jackson County, Oregon, orchards. Pear rust mite was found in the Hudson Valley of New York for the first time, and it seriously infested a pear orchard in the Columbia Basin of Washington. The latter is the first positive identification of the mite from Washington in five years. PEAR LEAF BLISTER MITE continued serious in new pear plantings in the Columbia Basin of Washington.

ELM SPANWORM (Ennomos subsignarius) caused some damage to untreated apple foliage in Oconee County, SOUTH CAROLINA; and APPLE-AND-THORN SKELETONIZER (Anthophila pariana) was more abundant than usual in western WASHINGTON, where untreated apple trees were completely browned by late summer. A LEAF BLOTCH MINER (Lithocolletis blancardella) caused severe damage to an apple orchard in Calhoun County, ILLINOIS; it was also observed in other locations of the State. An UNSPOTTED TENTIFORM LEAF MINER (Callisto geminatella) and a SPOTTED TENTIFORM LEAF MINER (Lithocolletis crataegella) increased during 1962 in NEW YORK. One of the two species could be found in most sections of the State. The former species was found locally in MISSOURI. EASTERN TENT CATERPILLAR (Malacosoma americanum) caused some damage to apple in the Bismarck area of Burleigh County, NORTH DAKOTA. GREEN FRUITWORM (Lithophane antennata) populations increased in most areas of MAINE, with particularly heavy infestations being observed in Monmouth, Kennebec County, and Turner, Androscoggin County, on young apple trees. However, less fruit injury was observed in 1962 in the Champlain Valley of NEW YORK. Light populations of WESTERN TUSSOCK MOTH (Hemerocampa vetusta) developed on pear in local areas of Contra Costa, Santa Clara and Tuolumne Counties, CALIFORNIA. YELLOW-NECKED CATERPILLAR (Datana ministra) caused defoliation of apple trees in IDAHO at Sandpoint, Bonner County, during mid-August. Infestations were also reported on apples at Saint Maries, Benewah County, during late August.

CODLING MOTH (Carpocapsa pomonella) was kept under control in WASHINGTON by control programs; however, a survey of 330 untreated trees in the upper Yakima Valley showed 50 percent infestations on fruit at harvesttime. Codling moth emergence in OREGON began in Jackson County May 5, with first eggs tagged May 9. In the Willamette Valley, first adults were collected at blacklights June 2, a second generation appearing from August 24. This species was practically nonexistent in all Oregon orchards that followed recommended programs. In IDAHO, codling moth continued common to abundant in apple orchards throughout the State, with heavy infestations generally restricted to neglected orchards and backyard trees. Adult flights were noted at Moscow, Latah County, May 30. General infestations were present in deciduous fruits requiring control in CALIFORNIA; and infestations were severe as usual in apples and pears in NEVADA and UTAH, although injury was less severe than in 1961 in the latter State.

Control of codling moth in apple orchards in COLORADO was exceptionally good again in 1962, with 98-100 percent clean fruit. Traps were run in Mesa, Montrose, Delta and Garfield Counties in cooperation with growers. Spray dates were posted from this information. With some of the newer insecticides having as long as 20-day residuals, some of the growers vary their spray programs to fit their own particular orchard and area, and may use only four cover sprays through the summer. All of the growers in Colorado use the timing of the first cover spray to establish their spray program, then may vary their sprays according to material being used. Control on pears was good in all areas of the State, with 97-100 percent control. Flights of codling moth in northern NEW MEXICO counties were much lighter in 1962 than usual. Damage to fruit, however, was evident in untreated orchards in these counties and in Hondo Valley, Lincoln County, where fruit was damaged by hail. Pears in Robertson County, TEXAS, were damaged during late August by codling moth larvae. Approximately 50 percent of the nearly mature fruits were damaged.

Codling moth infestations in commercial orchards in KANSAS were generally light, except in Doniphan County where spraying was curtailed in some orchards because of severe hail damage, and in one orchard in Sedgwick County. Heavy rains in May and June helped to keep the insect under control. Untreated check trees in an experiment orchard in Doniphan County averaged only 41 percent "wormy"fruits. Normal infestation would average 75-90 percent "wormy" fruit. Codling moth was of minor importance in MISSOURI apple orchards. Populations of codling moth were low and injury generally light in WISCONSIN. Adults were caught in a blacklight trap at Madison, Dane County, as late in the season as October 10. Codling moth in ILLINOIS was influenced by two periods of unusually warm weather, the last week of April and middle two weeks of May. Hatch appeared early because of the warm, dry weather in the southern half of the State. Fungicide sprays were not necessary at frequent intervals and the "first codling moth spray" came after hatch in some orchards. However, damage by codling moth continued to decline in Illinois as it has the past five years. In INDIANA, it was expected that this species would cause difficulties in 1962 due to the 1961 season's buildup. The potential was there and persistent efforts were necessary to contain the pest. Eggs continued to hatch well into October. Control in MICHIGAN was generally good although some late-season injury occurred in the western area. Emergence and activity in OHIO were earlier than usual and the hot, dry season threatened to make control of this pest difficult. However, most commercial growers had no control difficulties.

Codling moth was present only in poorly treated orchards in PENNSYLVANIA, and injury to treated apples was negligible in the Hancock area of Washington County, MARYLAND. Codling moth caused very little damage in northern VIRGINIA and no injury in central Virginia. It first appeared in NORTH CAROLINA in Wilkes County bait pails on May 9. Bait pail catches were extremely low for the season in that State. However, a buildup did occur in some apple orchards in SOUTH CAROLINA.

Average populations of codling moth were noted in MAINE,and the insect was at low levels for the year throughout NEW HAMPSHIRE. Codling moth was increasingly more difficult to find in CONNECTICUT. The dry spring and early summer delayed emergence in VERMONT. Populations were at a low level for the second year in that State. Codling moth was about normal during 1962 in NEW YORK.

EYE-SPOTTED BUD MOTH (Spilonota ocellana) was at low population levels throughout NEW HAMPSHIRE, and average population levels were noted in MAINE. In OHIO, there was one report of light to moderate eye-spotted bud moth damage in an orchard during 1962. Eye-spotted bud moth was found on new growth of untreated apple in Kingston, Washington County, RHODE ISLAND, May 23, and persisted into early June. In WISCONSIN,larvae were observed feeding on foliage and buds of apple trees in Door County about the fourth week in May; however, populations were generally low in both this area and at Gays Mills, Crawford County.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was first caught in bait pails in Wilkes County, NORTH CAROLINA, on April 24. Populations were also much less than those of the previous year in the western apple-growing areas of North Carolina. Injury was less than normal in central VIRGINIA. Practically no injury was caused during the first and second generations in this area of the State, but a slight buildup occurred during the third brood which caused some injury to several orchards. Red-banded leaf roller caused very little injury in northern Virginia. Only slight damage to untreated checks in all commercial orchards was noted in MARYLAND and populations remained low in PENNSYLVANIA. Red-banded leaf roller, a serious problem over the past six years in NEW YORK, was at extremely low levels during 1962. Low population levels were noted in VERMONT, NEW HAMPSHIRE and RHODE ISLAND. Average levels were observed in MAINE.

Red-banded leaf roller was unusually light in 1962 in OHIO, and commercial injury was less than in recent years in MICHIGAN. Most problems in the latter State were largely due to injury in September. Low numbers were again present in INDIANA although considerable damage did occur in October to apples in common storage. The insect was well controlled in ILLINOIS, except in a few orchards where the carryover will be high. Populations were high in the Door County area of WISCONSIN, but were still apparently less of a problem than during the 1961 season. Catches in the Gays Mills area of Wisconsin indicate this insect to have been present in significant numbers. Red-banded leaf roller varied in density from light to heavy across MISSOURI, but it was easily controlled in commercial orchards and no severe problem developed. In KANSAS, egg masses were easily collected during the last week of April, with 15 or more found on some trees in Doniphan County area. Damage to fruit and leaves was light in Kansas until September. The infestation was checked by heavy rainfall during the egg-hatching period in May. A large carryover is indicated for 1963 in Kansas. No red-banded leaf rollers have yet been found in the south central fruit-growing areas of the State. No infestations of red-banded leaf roller were found in Sandoval and Bernalillo Counties, NEW MEXICO, where this pest has been a problem the previous two years.

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) was more abundant and/or more damaging than normal in UTAH. Late instars were considerably abundant on apple and pears during late June in the Moscow area of Latah County, IDAHO. Only an occasional larva was found in apple orchards in Taos County, NEW MEXICO, during the summer. This is the second consecutive summer that infestations have remained low in New Mexico. In WISCONSIN, larvae were observed feeding on foliage and buds in Door County during the fourth week of May. Populations were generally high and appeared more abundant in the Gays Mills area, Crawford County, than in the past few years. Fruit-tree leaf roller varied in density from light to heavy across MISSOURI. It was easily controlled in commercial orchards and no severe problem developed. Fruit-tree leaf roller was more abundant than usual on apples in the Hancock area of Washington County, MARYLAND, but regular treatment programs kept it under control. Average populations were noted in MAINE, and it was troublesome in young orchards in VERMONT.

Apple trees in Hill County, MONTANA, were heavily infested with UGLY-NEST CATERPILLAR (Archips cerasivoranus).

General infestations of PEAR THRIPS (Taeniothrips inconsequens) occured in pear orchards in Sonoma County, CALIFORNIA, but the pest was below average in numbers and importance in UTAH.

A COREID BUG (Leptocoris rubrolineatus) infested pear orchards in Mendocino County, CALIFORNIA, and HICKORY PLANT BUG (Neolygus caryae) was abundant in some pear orchards in CONNECTICUT. TARNISHED PLANT BUG (Lygus lineolaris) was reported light to moderate in many MAINE orchards, with injury (dimpling of fruit) observed in midseason, being generally light but of moderate intensity in a few locations. This species was abundant in some pear orchards in CONNECTICUT, present in VERMONT orchards and caused unusually heavy injury in NEW YORK. Injury increased in Columbia County, New York, orchards, and injury was more widespread in the Champlain Valley of the same State. Hot weather, just before and during bloom, favored tarnished plant bug in the latter area of New York. Tarnished plant bug and other plant bugs were more abundant than in 1961 on apple in PENNSYLVANIA. STINK BUGS (Euschistus spp.) caused some early season injury to apples in central MISSOURI.

APPLE APHID (Aphis pomi) populations reached substantial numbers and caused moderate leaf rolling by late June and early July in MAINE. In most areas, infestations were at about normal levels. Apple aphid was present in RHODE ISLAND but not a problem. However, the aphid was a problem during the summer in most sections of NEW YORK. In PENNSYLVANIA, very heavy early season infestations were present, but disease, predators, parasites and chemical controls brought them under control before any damage occurred. Populations of apple aphid were noticeable in some apple orchards in the Hancock area of Washington County, MARYLAND, during June, but were kept under control. Apple aphid populations reached levels that needed controls in several areas of WISCONSIN. Where a reasonably good control program was already in effect in the State, this insect was of minor concern. Infestations were lighter than usual in OHIO, although there were a few reports of heavy primary infestations in some commercial orchards. Apple aphid was present all season in MISSOURI; however, the population density varied considerably from month to month and from orchard to orchard. The aphid was below normal this season in UTAH generally, although spottedly numerous. It was, however, more abundant and/or more damaging than normal in the spring. In IDAHO, population levels of apple aphid were generally below those of 1961. It was common to abundant, particularly during June, in neglected orchards in the western part of the State. Infestations in WASHINGTON were generally light in the Yakima Valley. Development was late, with high populations during late June in north central Washington requiring controls during July and August. In CALIFORNIA, heavy apple aphid populations developed on apple trees in Humboldt County in July.

APPLE GRAIN APHID (Rhopalosiphum fitchii) was very heavy early in the season in PENNSYLVANIA, but disease, predators, parasites and chemical controls brought it under control before any damage occurred. In OHIO, infestations were heavy on apple buds in early season. Heavy fall migration to apple trees occurred in some orchards, causing constant annoyance to pickers. Apple grain aphid was not a problem in MISSOURI, and was occasionally encountered on apple foliage in conspicuous numbers in UTAH. In KANSAS, it was numerous in April, with about 50 percent of the untreated apple buds being infested. Counts ranged 0-25 per bud (average 5 per bud).

ROSY APPLE APHID (Anuraphis rosea) caused damage in VIRGINIA in Frederick and adjoining counties where no controls were used early in the season. No economic infestations occurred on commercial orchards in the Hancock area of Washington County, MARYLAND, and the aphid was controlled by disease, predators, parasites and chemicals after being very heavy earlier in PENNSYLVANIA. In RHODE ISLAND, occasional small infestations were present on untreated trees in Kingston, Washington County, and Johnston,Providence County, in the spring, but no general buildup occurred. Injury was frequently noted in OHIO, although no commercial damage was reported. Average or below average numbers were present in INDIANA, and the aphid was not a problem in MISSOURI. Rosy apple aphid caused slight damage during 1962 in the Doniphan County area of KANSAS, although the damage was moderate to severe in 1961. The aphid was of little importance to most apple growers in COLORADO. Loss of one percent was attributed to this insect in that State. Rosy apple aphid was below normal this past season in UTAH, being worst in the spring. In CALIFORNIA, populations developed on apple plantings in Butte and Sonoma Counties. Generally, light infestations occurred.

WOOLLY APPLE APHID (Eriosoma lanigerum) was a very local problem on apples in CALIFORNIA and apparently was not as common as usual. The pest appeared more abundant than normal in orchards in the Willamette Valley of OREGON, but it was a problem only in those orchards not receiving a full control program. In WASHINGTON, woolly apple aphid was confined to pruning wounds of large limbs in the Yakima area, Yakima County. It became a problem in scattered areas of north central Washington, requiring special control measures for the first time in several years. Woolly apple aphid was generally below normal this past season in UTAH; however, it was spottedly numerous. It was exceptionally numerous in a few isolated orchards in southern INDIANA, not a problem in MISSOURI, and present in VERMONT.

Various species of APHIDS were important pests of apples in the western part of NORTH CAROLINA, and populations were similar to those of 1961. In MISSOURI, extremely heavy overwintering populations of eggs of various species on apple caused considerable apprehension early in the season, but dormant and delayed-dormant treatments resulted in excellent control. Undetermined species of SPITTLEBUGS caused concern in areas of east TEXAS by their attacks on pear and plum trees.

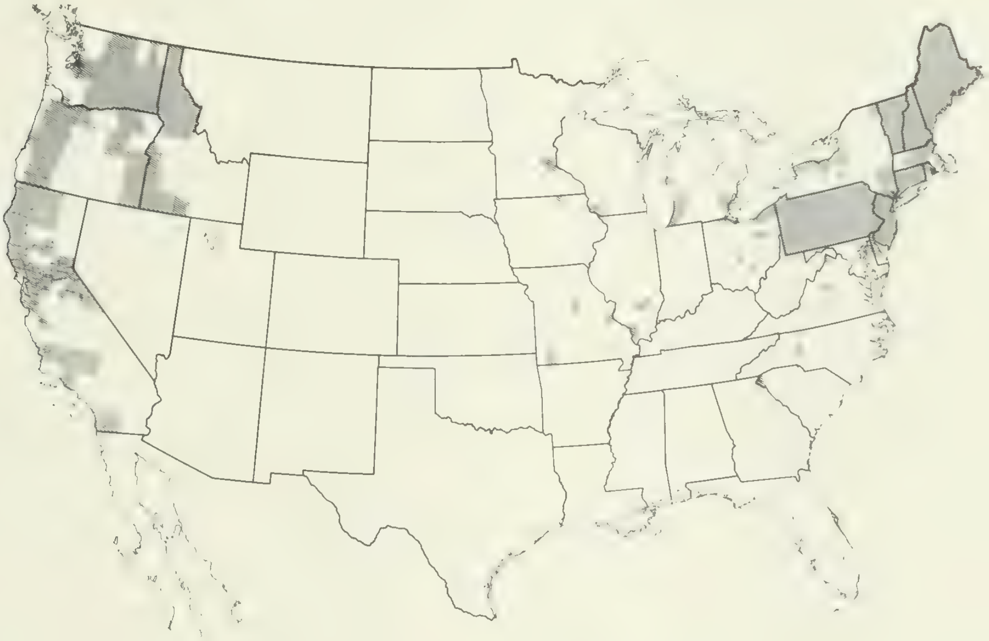
APPLE LEAFHOPPER (Empoasca maligna) was observed in two orchards in the Champlain Valley of NEW YORK where it caused considerable foliage injury and fruit speckling. It also caused severe damage in one block of apple nursery stock in OHIO. Approximately normal numbers and/or injury were observed in UTAH.

A few local, heavy infestations of a SOFT SCALE (Lecanium kunoensis) were present on apple trees in Paradise, Butte County, CALIFORNIA. However, this scale insect is not widespread in California. Infestations of OYSTERSHELL SCALE (Lepidosaphes ulmi) were commonly noted on neglected fruit trees throughout IDAHO; one moderate infestation recorded in May on crab apple trees at Cottonwood, Idaho County.

A small percent of apple fruits, infested with SAN JOSE SCALE (Aspidiotus perniciosus), caused an export problem in WASHINGTON in 1961, but this was largely overcome by a more extensive control program in 1962. Only two instances of heavy San Jose scale infestations on apple twigs were recorded during 1962 in OHIO.

BUFFALO TREEHOPPER (Stictocephala bubalus) was prevalent in newly planted apple trees in VERMONT, and GRAPE MEALYBUG (Pseudococcus maritimus) was locally heavy on apples in Humboldt County, CALIFORNIA.

PEAR PSYLLA (Psylla pyricola) increased rapidly during May and June in central WASHINGTON, encouraged by early season control failures and favorable weather. The pest was greatly reduced in the Yakima area of Yakima County by high temperatures in July and control chemicals. Resistance, which appeared in 1961 to the latest phosphate control material, became a serious problem in 1962. Populations of pear psylla were low throughout the season in western Washington. Control of the psylla in Jackson County, OREGON, was excellent. Only a few negligent growers were bothered by this pest in the Hood River or the Willamette Valley in 1962. Population levels of pear psylla in IDAHO were apparently below those recorded during the past few years, particularly in the Moscow-Lewiston area of Latah and Nez Perce Counties. In CALIFORNIA, several counties not previously recorded as having pear psylla were added in 1962. The counties reported were Alpine, Butte, Glenn, Kern, Mono, San Diego, Tuolumne and Ventura. This insect probably received more attention in 1962 than in previous years in California since it is suspected of being a vector of pear decline. Pear psylla was abundant in home orchards in CONNECTICUT during 1962, and nymphs were common on neglected trees June 26 and August 2 in RHODE ISLAND.



Distribution of Pear Psylla

APPLE TWIG BORER (Amphicerus bicaudatus) damaged apple trees in Baylor County, TEXAS; and FLATHEADED APPLE TREE BORER (Chrysobothris femorata) killed about 30 percent of the trees in a young apple orchard near Belen, Valencia County, NEW MEXICO. Larval counts in the latter case were often as high as 5 per tree. FULLER ROSE BEETLE (Pantomorus godmani) was reported light on apple trees in Humboldt County, CALIFORNIA.

PLUM CURCULIO (Conotrachelus nenuphar) was about normal for the year in NEW YORK and MAINE, somewhat less troublesome in NEW HAMPSHIRE, but it was the number two pest of home orchard apples in MASSACHUSETTS. Plum curculio was a minor pest of apples in western MARYLAND and MISSOURI in 1962, and not generally severe on that crop in OHIO. Adults began appearing in WISCONSIN May 14 in Dane County, and feeding scars were observed in Door County during the latter part of May. Populations were heavier than in 1961 in Wisconsin, and were numerous enough that some adults were caught in blacklight traps. ROSE CHAFER (Macrodactylus subspinosus) caused severe injury to developing apple fruit in NORTH CAROLINA; May 22 in a Henderson County orchard and the first week of June in an Avery County orchard.

PEAR-SLUG (Caliroa cerasi) was very scatteredly abundant throughout IDAHO, and caused some damage to backyard cherry trees in the southwest area during late July. Medium populations developed in a few pear plantings in northern CALIFORNIA, and infestations were above normal in the central and northern counties of NEVADA. Pear-slug was common in UTAH, but damage was less than normal in 1962. In NEW MEXICO, light infestations were found on pears in Sandoval County.

The range of the EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) increased during 1962 in NEW YORK, spreading northward toward Albany in the Hudson Valley. It was found at Schodack Landing, southern Rensselaer County, for the first time. Although previously reported in east central MASSACHUSETTS, the sawfly increased in activity in that area of the State, especially where ineffective or no insecticide was used before calyx stage. Larvae of European apple sawfly were recovered from untreated apple in Johnston and Kingston, Washington County, RHODE ISLAND, on June 6.

APPLE MAGGOT (Rhagoletis pomonella) was not troublesome in NEW HAMPSHIRE until very late in the season, and egg laying was observed as late as the first week in October. Cold July weather contributed to the late development. Activity was also very late in VERMONT and about normal for the year in NEW YORK although it was delayed by the dry weather. In MASSACHUSETTS, apple maggot was more troublesome on apples than blueberries. It continued as the number one pest of apples in home orchards in Massachusetts. Activity in 1962 was unusually late in the season. Apple maggot was abundant on Delicious varieties of apple in poorly or nontreated home orchards in CONNECTICUT and was common in fruit from home gardens throughout RHODE ISLAND. Emergence of apple maggot in MAINE was somewhat delayed by unseasonal temperatures in May and June. Emergence began on June 30, peaked on July 22 and ended on September 14. Ninety-nine percent of total adults recovered had emerged by August 17 in the State. Generally, populations of apple maggot were higher than during 1961 in OHIO, although trap records showed that flies were not present as late in the season. Many reports of severe injury were received from home fruit growers. The maggot infested almost 100 percent of the fruit in small, untreated orchards in northern INDIANA. Commercial growers adjacent to such locations experienced difficulty in preventing oviposition in their apples. Apple maggot was more numerous than normal in ILLINOIS; a high population was discovered in an abandoned orchard in Calhoun County, considerably south of its normal range in Illinois. Adult emergence in MICHIGAN was approximately two weeks earlier than usual. Populations were up from 1961. Some late August problems occurred in southwestern Michigan. In WISCONSIN, the first adults appeared in Door County on June 27, and populations appeared to be somewhat heavier than in 1961 in that area. Sticky boards used in Winnebago County failed to show any significant adult activity although observations by at least one grower indicated a number of heavily infested windfalls in that area. Adults of apple maggot were first taken in MINNESOTA on sticky traps in the Lake Minnetonka area west of the Twin Cities, Hennepin County, on July 6. By July 13, adults were reported throughout the southern half of Minnesota, but emergence was considered to be light in total numbers. First adults were reported at Duluth, St. Louis County, on August 15. High populations were reported by July 27 in southeastern Minnesota. Adults remained active through August and were observed laying eggs on August 24 in La Crescent area, Houston County.

EUROPEAN RED MITE (Panonychus ulmi) was a serious problem in most orchards in NEW YORK. Above-average overwintering populations, plus favorable early season temperatures and a low rainfall, contributed to the rapid buildup of mites.

European red mite was the most important pest of apples in PENNSYLVANIA, and was severe during August in VERMONT and NEW HAMPSHIRE when populations increased rapidly. It required continual attention in commercial orchards in MASSACHUSETTS in spite of cool conditions, and was prevalent in NEW JERSEY during the year.In MAINE, European red mite was well controlled in most commercial blocks. Only four generations were observed in the Monmouth area, Kennebec County; the first three were light, but the fourth showed considerable buildup and caused moderate to heavy damage in early August in untreated or poorly treated plantings. European red mite was more difficult to control with standard acaricides than usual in all orchard areas of northern VIRGINIA. In central Virginia, it built up to injurious levels during midseason and was difficult to control. The mite continues to be a major pest of apples in the western part of NORTH CAROLINA; populations were about the same as in 1961.

European red mite was the most important pest of all fruits in OHIO during 1962. In MICHIGAN, unseasonably warm weather in May produced populations of outbreak proportions. High populations persisted until August. Many apple growers experienced difficulty in obtaining control. Populations in INDIANA started building up before petal fall and continued persistent and, in many cases, high through August 10. This species has become resistant to most of the acaricides labeled for use during the postbloom period in Indiana. In ILLINOIS, this species is now expected to be an annual problem to fruit growers. It was generally well controlled in 1962. Populations in WISCONSIN were generally low throughout most of the State and failed to attain significant numbers. European red mite overwintering eggs were extremely heavy on apple trees in MISSOURI and caused considerable apprehension early in the season, but dormant and delayed-dormant treatments resulted in excellent control. The pest caused bronzing of apple foliage during a warm, dry period in early May in the Doniphan County area of KANSAS.

European red mite continued to be scarce on apples in the Yakima area of Yakima County, WASHINGTON. Populations resistant to the latest acaricides continue to develop in north central Washington (since 1959). Resistance is also developing on pears. European red mite caused local damage to fruit in OREGON. It was important in a few Hood River orchards when controls were abbreviated. Infestations in CALIFORNIA were reported medium to heavy on apples and pears in Sonoma, Humboldt, El Dorado, Santa Clara, Mendocino and Santa Barbara Counties.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was one of the main arthropod problems in COLORADO, with several apple orchardists reporting poor control with some of the better acaricides on the market. Mite populations were high from the middle of the summer on, and high temperatures helped to put stress on the acaricides as well as the extended spray intervals that many growers use. There was a good crop of pears in all the pear-growing districts; this species was the most important arthropod pest of pears. Mite injury was evident in a number of pear orchards, with blackened foliage on many of the trees. This occurs during July and early August and often during harvest. Many growers reported only fair to poor control with some of the better acaricides on the market. A mite study and evaluations of new acaricides that will soon be available, as well as some of the present acaricides now in use, was conducted in the Leman Pond pear orchard in Clifton, Mesa County, Colorado. Two-spotted spider mite was extremely prevalent in most areas of CALIFORNIA and was a serious problem in pear orchards in Jackson County, OREGON, from early season to harvest. Populations in the latter area were observed in tree bole and top situations in early May. Browning and leaf drop was common sympton in the dry midseason. Chemical control with the previously effective material proved unreliable in many orchards in this area of Oregon, but the multiple applications of short-residual acaricides prevented serious loss of the crop.

Two-spotted spider mite caused some bronzing of apple foliage during early May in the Doniphan County area of KANSAS. No other damage occurred until late August when it again increased in numbers. This species caused severe bronzing of apple foliage in Rilev County during late July and August. In MISSOURI, two-spotted spider mite threatened apple orchards statewide from midseason to late season, but it was eliminated successfully. Infestations were present on apple and crab apple in various areas over NORTH DAKOTA. This species usually does not become a problem in ILLINOIS until late July, but in 1962 it required controls by late May in some orchards. Two-spotted spider mite was prevalent in many INDIANA orchards from mid-June into late August, but it was not so severe in September as it was in 1961. This species is highly resistant to most acaricides labeled for its control in Indiana. Populations in OHIO were more numerous and injurious to apples than usual, and they built up on apples and pears during August in MICHIGAN. The mite was injurious during midseason in some central VIRGINIA orchards where it was difficult to control. Two-spotted spider mite was generally less troublesome in MASSACHUSETTS except in occasional orchards, and was normal in NEW YORK compared with other years.

SCHOENE SPIDER MITE (Tetranychus schoenei) was more difficult to control in northern VIRGINIA with the standard acaricides than usual. In RHODE ISLAND, a FRUIT-TREE MITE (Bryobia rubrioculus) was common on untreated apple trees in Johnston, Washington County, in late June. Unspecified MITES were an early threat to apple orchards in SOUTH CAROLINA, but were mitigated by weather and control efforts.

A SPIDER MITE (Tetranychus mcdanieli) was the major apple pest in the Yakima Valley of WASHINGTON, with increasing resistance to the latest acaricides. During 1962, populations resistant to both the most used summer acaricides were found for the first time in the north central area, leading to considerable foliage injury and poor commercial control. Late flareups caused 10 percent cullage on poor maturity of apples in Yakima County. There was also about 20 percent cullage of pears in the upper Yakima Valley due to fruit injury from oil-insecticide combinations. In CALIFORNIA, a rather unusual occurrence of this mite, which is not usually encountered in the State, occurred in apple plantings in the Yucaipa area of San Bernardino County in medium populations. T. mcdanieli damaged foliage of apple trees in areas of NEW MEXICO: Hondo area, Lincoln County, and in Bernalillo, Sandoval, Santa Fe and Rio Arriba Counties. Damage was severe in Rio Arriba County where infestations were not treated because of spring freeze which killed the fruit. The same species caused concern in the San Antonio area of Bexar County, TEXAS, by feeding in the blossom end of young apples.

PEAR RUST MITE (Epitrimerus pyri) infested pears in Yuba, El Dorado and Placer Counties, CALIFORNIA; some infestations were severe. The mite badly damaged foliage and fruit in several Jackson County, OREGON, pear orchards. Bartlett and Doyenne du Comice varieties of pear were particularly affected. Development in WASHINGTON was delayed 2-3 or more weeks. The mite seriously infested a pear orchard in the Royal Slope area of the Columbia Basin. This is the first positive identification of this mite from Washington in five years. Pear rust mite was a serious problem in western NEW YORK orchards. It was also found for the first time in the Hudson Valley area of the State.

PEAR LEAF BLISTER BEETLE (Eriophyes pyri) continues to be a serious pest of new pear plantings in the Columbia Basin of WASHINGTON. Failure of growers to apply postharvest sprays is the main reason for problems. Light infestations occurred spottedly over IDAHO. Moderate damage to pear foliage was reported from Orofino, Clearwater County, and from Saint Maries, Benewah County. Pear leaf blister mite was extremely light in all pear-growing areas of COLORADO, with little injury noted on fruits or foliage. In UTAH, approximately normal numbers and/or injury were observed in 1962. Infestations of pears in CALIFORNIA occurred in Marin, Humboldt and Los Angeles Counties. Populations were light to heavy.

APPLE RUST MITE (Aculus schlechtendali) development in WASHINGTON was delayed 2-3 or more weeks. It was less of a problem than in 1960-61. This mite was identified in NEW YORK from specimens collected in Orleans, Orange and Clinton Counties, one county in each of the three major apple-production areas. Damage, if any, was not reported or assessed.

AN ERIOPHYID MITE (Eriophyes n. sp.) seriously infested a pear orchard in the Royal Slope area of the Columbia Basin in WASHINGTON. This is the first record of this new species in the State.

Stone Fruit Insects

Highlights:

The control of PEACH TREE BORER continues to be the major insect problem in Georgia, and the general infestation in that State continues heavier than an average year. It was also a problem in North and South Carolina, and in local areas of Iowa and Michigan. WESTERN PEACH TREE BORER increased in Washington and was damaging in California. Infestations of LESSER PEACH TREE BORER were heavier in Virginia than they have been for a number of years. The borer also increased in Pennsylvania and was a primary pest of peaches in Ohio and Indiana. Western Michigan sweet cherries and peaches also suffered from attacks, and localized damage was reported in Iowa, Illinois, Missouri and New Mexico. PEACH TWIG BORER was a considerable problem which required controls in California, and the borer caused extreme losses in Jackson County, Oregon, peach orchards. Infestations of peach twig borer in west central Nevada were the heaviest in recent years. Blacklight traps in Colorado helped establish spray dates which were beneficial in holding losses down. ORIENTAL FRUIT MOTH infestations in Georgia were somewhat heavier than in 1961, and the pest was a considerable local problem to cling peaches in the upper San Joaquin and lower Sacramento Valleys of California.

Development of a CHERRY FRUIT FLY (Rhagoletis cingulata indifferens) was late in Washington and most fruit escaped damage. PLUM CURCULIO was well controlled in Georgia and infestations in South Carolina were probably as low as they have ever been. Plum curculio appeared to be well controlled in most other States although some damage was reported in local areas. SHOT-HOLE BORER caused some damage in New Mexico and California; controls were required. MITES were important in several areas of the country during the year. EUROPEAN RED MITE populations on plum and peach in Ohio were the heaviest in several years, and TWO-SPOTTED SPIDER MITE was a serious problem in Oregon peach orchards. Two-spotted spider mite and PEACH SILVER MITE were both a problem in Colorado. PLUM RUST MITE was delayed 2-3 weeks in Washington and many crops escaped injury.

PEACH TREE BORER (Sanninoidea exitiosa) populations were somewhat lighter than the preceding year in GEORGIA, but they continued heavy in some orchards, causing considerable damage. The control of this insect continues to be the major insect problem in the State, and the general infestation continues heavier than that of an average year. A buildup was noted on peaches in some areas of SOUTH CAROLINA, and the pest continues important on peaches in the sandhills area of NORTH CAROLINA. Normal populations of peach tree borer were present in LOUISIANA and it was not a problem in MISSOURI. Peach tree borer is well under control in most commercial orchards in KANSAS where control measures have been applied. However, the pest did cause considerable damage to peach and plum trees in nurseries where control measures were not taken. Peach tree borer was reported severe during June in Des Moines County, IOWA, and caused considerable injury in southwestern MICHIGAN following a winter that was damaging to peach trees. Infestations in OHIO were generally light during 1962. WESTERN PEACH TREE BORER (S. exitiosa graefi) increased in peach and prune orchards throughout WASHINGTON during 1961-62; two-season control program was usually required. This borer also caused quite widespread damage to stone fruits in CALIFORNIA from Merced County north. In NEW MEXICO, Sanninoidea sp. severely injured peach trees in Valencia, Bernalillo, Sandoval, Santa Fe and Rio Arriba Counties.

LESSER PEACH TREE BORER (Synanthedon pictipes) infestations in VIRGINIA were heavier than they have been for a number of years. A number of trees in the eastern part of the State were killed by the feeding of this insect. The winter carryover was heavy. Lesser peach tree borer was heavy in two peach orchards in Washington County, MARYLAND, and reported increasing on peaches, plums and prunes in PENNSYLVANIA. Some mortality to prunes was reported in the latter State. The insect continued as a primary pest in OHIO peach orchards, especially where peach canker disease is prevalent, and lesser peach tree borer was very abundant on sweet cherries and peaches in western MICHIGAN. It was probably the most important insect pest in orchards in the Vincennes area of INDIANA in early June, and increased in some peach orchards in ILLINOIS following light winter injury. Lesser peach tree borer was reported to be severe in Des Moines County, IOWA, in June, and one peach orchard in southeastern MISSOURI had a problem with this species. However, it was not a problem statewide in Missouri. Normal populations were present in LOUISIANA. Infestations in the GEORGIA peach belt were a little heavier than in 1961 and 1960, which were somewhat less than those of some previous years. This may be partially due to more winter injury or dying trees in 1962 than in 1961 or 1960. Lesser peach tree borer was found damaging to peach trees in orchards near Espanola, Rio Arriba County, NEW MEXICO.

PEACH TWIG BORER (Anarsia lineatella) occurred statewide in CALIFORNIA and was a considerable problem which required control from early spring through the summer. In OREGON, the borer caused extreme losses in Jackson County peach orchards not receiving the protection of a treatment program. Slight damage to Willamette Valley peach and prune orchards was reported. Infestations in NEVADA were the heaviest in recent years in the west central counties, and damage in UTAH was common, above normal, and equal to injury of that of 1961. In COLORADO, special emphasis was placed on this pest due to losses to peaches during the previous two years. Losses had run from 8 to 25 percent due to poor timing and application of treatments. Blacklight traps were used in 1962 in the timing of peach twig borer sprays and were run at two different locations in Mesa County. Two spray dates, June 20 and July 9, were posted in Mesa County and one in Delta County, July 20. With growers following these established spray dates, losses were held to less than one percent in the majority of orchards in Mesa County. The Paonia area of Delta County had a higher loss (10-20 percent), pointing out the need for light trap data in that area for more exact timing.

Medium populations of FALL CANKERWORM (Alsophila pometaria) developed in prunes in the Winters area of Yolo County, CALIFORNIA; and EASTERN TENT CATERPILLAR (Malacosoma americanum) was widely distributed in the central part of TEXAS where up to three tents per tree were observed on 50 percent of the peach and plum trees in some areas. Light populations of WESTERN TUSSOCK MOTH (Hemerocampa vetusta) developed on prune and apricot in local areas of Contra Costa, Santa Clara and Tuolumne Counties, CALIFORNIA. Also in California, RED-HUMPED CATERPILLAR (Schizura concinna) infested prunes from Fresno County north in the State. Infestations occurred much later in 1962 than in past years. Generally, the pest was very local and particularly damaging to young trees.

ORIENTAL FRUIT MOTH (Grapholitha molesta) infestations in GEORGIA were somewhat heavier than in 1961. Twig injury in several commercial orchards caused alarm during the year, and the general infestation in 1962 was somewhat heavier than that of an average year. Oriental fruit moth caused some twig damage to untreated, young peach orchards in SOUTH CAROLINA, but caused no injury in central VIRGINIA. However, the pest caused heavy injury to early peaches in Baltimore County, MARYLAND, and to late peaches in Montgomery County, same State. Oriental fruit moth damaged new growth of peach in Washington and Providence Counties, RHODE ISLAND, early in the season. In CONNECTICUT, the pest is becoming increasingly more difficult to find.

Oriental fruit moth continues to be present in ARKANSAS, but controls are effective. It was not a problem in treated peach orchards in MISSOURI, but considerable damage was done in early season on untreated nonbearing trees. In KANSAS, oriental fruit moth was moderate to severe in late-maturing peaches in the Arkansas River Valley, south central area. Nearly 50 percent of the fruit was "wormy". A favorable period for egg laying occurred in ILLINOIS, and populations became established in a few orchards where they persisted until harvest. Injury in MICHIGAN resulted from the fourth generation which appeared in August. In OHIO, first-brood injury by oriental fruit moth was general, but there were no outstanding reports of injury by later broods.

Oriental fruit moth was a considerable local problem to cling peaches in the upper San Joaquin Valley and lower Sacramento Valley of CALIFORNIA, and occurrence of the pest in IDAHO was spotty in orchards and backyard fruit trees throughout the western portion of the State, with population levels apparently below those noted during 1961. Surveys in OREGON indicate that a very low population is maintaining itself in the Salem area; only 3 adult specimens were collected in two known infested properties.

CHERRY FRUITWORM (Grapholitha packardi) appeared to be a greater problem in Door County, WISCONSIN, than in 1961, and it caused more damage than usual during 1962 in OHIO. Populations were normal in UTAH. CODLING MOTH (Carpocapsa pomonella) infested a large number of peaches in Washoe County, NEVADA, during the summer. LEAF CRUMPLER (Acrobasis indigenella) became a moderate, local problem in Wharton County, TEXAS, by boring into plum twigs and destroying terminals. FRUIT-TREE LEAF ROLLER (Archips argyrospilus) infested prune and apricot plantings in Santa Clara County, CALIFORNIA. Populations were light to heavy. Late instars were quite abundant on prunes during late June in Moscow area of Latah County, IDAHO.

RUSTY PLUM APHID (Hysteroneura setariae) and MEALY PLUM APHID (Hyalopterus pruni) were approximately normal in numbers and/or injury in UTAH, and the latter species developed to heavy numbers on apricot in Clark County, NEVADA, in May. BLACK PEACH APHID (Anuraphis persicaeniger) was below average in numbers and in importance in UTAH. GREEN PEACH APHID (Myzus persicae) overwintering egg survey in COLORADO peach orchards showed a definite increase in the numbers of eggs over the previous two years, and growers were alerted to this situation. An intensive spray program was carried out early in the season which eliminated the usual aphid problem in the late spring when it is much harder to control. BLACK CHERRY APHID (Myzus cerasi) caused some injury to fruits and foliage of cherries in COLORADO where no attempts were made to control it early in the season by the grower. It was easily controlled wherever the grower applied a treatment early in the season before the leaves became curled and colonies established. The cherry crop was light in most Colorado orchards due to frosts after the bloom period. Black cherry aphid damage was spotty, below normal generally in central and northern UTAH.

PERIODICAL CICADA (Magicicada septemdecim) caused moderate damage to peaches in an orchard in St. Marys County, MARYLAND.

WHITE PEACH SCALE (Pseudaulacaspis pentagona) was quite abundant in peach orchards in Barney, Brooks County, GEORGIA, and caused considerable damage in some orchards in that locality. Summer sprays have proven to be ineffective against this scale insect in Georgia. In TEXAS, light to moderate infestations of white peach scale were present in the Fort Worth-Weatherford area, north central section. This pest is becoming more widespread each year in Texas. SAN JOSE SCALE (Aspidiotus perniciosus) infestations in GEORGIA were about like those of the last three years, less than that of 1958 or that of an average year. Infestations were common on peach trees in central and north central TEXAS, but reduced on stone fruits in WASHINGTON. At The Dalles, Wasco County, OREGON, San Jose scale was occasionally a problem in cherry orchards.

OLIVE SCALE (Parlatoria oleae) was locally medium to heavy in peach, plum and olive orchards in a limited number of CALIFORNIA counties. Biological control has been very effective, and parasite liberation by the University of California is continuous in many areas of the State. Also in California, light populations of EUROPEAN FRUIT LECANIUM (*Lecanium corni*) occurred on apricot and prune orchards in western Yolo County. Overwintering nymphs of this latter species also infested peach trees in a Washington County, MARYLAND, orchard.

CATFACING INSECTS were generally present in OHIO peach orchards, but no serious infestations were reported except at Wooster, Wayne County, where severe damage by *Lygocoris omnivagus* and *L. quercalbae* was observed. Catfacing insects were well controlled in eastern MASSACHUSETTS. STINK BUGS (*Euchistus* spp.) caused some injury to peaches late in the season in southeastern MISSOURI. Unspecified STINK BUGS and COREID BUGS did not deform and gnarl peaches as badly in GEORGIA. This may be due to special sprays for sucking bugs early in the 1962 spray season, which were prompted by a heavy infestation in previous years. HICKORY PLANT BUG (*Lygocoris caryae*) and TARNISHED PLANT BUG (*Lygus lineolaris*) were abundant in some CONNECTICUT peach orchards, and the latter species and other unspecified PLANT BUGS were more abundant than in 1961 on peaches in PENNSYLVANIA. In CALIFORNIA, medium populations of a PLANT BUG (*Largus convivus*) developed on peach in the southern part of Yuba City, Sutter County, and a COREID BUG (*Leptocoris rubrolineatus*) infested prune orchards in Mendocino County.

Development of a CHERRY FRUIT FLY (*Rhagoletis cingulata indifferens*) in western WASHINGTON was very late because of cool weather and, although it became numerous, most fruit escaped damage. Adults of this species emerged May 18 in Jackson County, OREGON, and June 11 in Benton County, same State. Control in Oregon was excellent in 1962. BLACK CHERRY FRUIT FLY (*R. fausta*) populations were very high during 1962 in OHIO.

In CALIFORNIA, PEAR-SLUG (*Caliroa cerasi*) developed to medium populations in cherry plantings in the northern area. Also, a LONCHEID FLY (*Dasiops alveofrons*) attacked sound apricots in the Modesto area of Stanislaus County. This situation has developed in a few other local, widely separated areas within the State in past years.

PLUM CURCULIO (*Conotrachelus nenuphar*) infestations in GEORGIA peaches were very light throughout the year, and were much less than those of an average year, as it was in 1961 and 1960. This insect is now under excellent control in the Georgia peach belt as a result of the development of new insecticides, spray schedules and equipment for the application of insecticides during recent years. The hibernating population of adults in the peach belt of Georgia in the winter of 1962-63 is much less than that of an average year. Infestations in SOUTH CAROLINA peach orchards were low, probably as low as they have ever been. However, plum curculio continues to be an important pest of peaches in the sandhills area of NORTH CAROLINA, and a moderately heavy second generation developed in central VIRGINIA, but insecticides kept injury to harvested fruits very low in the latter State. Plum curculio again was very light in peach orchards in western MARYLAND and was present only in poorly treated orchards in PENNSYLVANIA. Adults were jarred from a tree in Kingston, Washington County, RHODE ISLAND, on May 30; feeding and oviposition were general by June 5.

Plum curculio larval damage to unsprayed or poorly sprayed stone fruits in OHIO was rather heavy. Larval emergence from dropped plums occurred about June 1 at Wooster, Wayne County, which was earlier than usual. In ILLINOIS, controls were satisfactory in 1962. It emerged quickly from winter hibernation during the two early warm periods during the last week of April and the middle two weeks of May. Plum curculio was troublesome in some poorly treated peach orchards in southeast MISSOURI. It was not severe in KANSAS, but slightly above the 1961 level. Injury was readily found in isolated plum and peach trees in Doniphan County. Plum curculio attacked peach and plum in moderate numbers in central, northeast and north central TEXAS in 1962. A few orchards supported heavy infestations, particularly in the Forth Worth-Weatherford area, north central section of the State.

PLUM GOUGER (Anthonomus scutellaris) infested plum locally in Morton County, NORTH DAKOTA. GREEN JUNE BEETLE (Cotinis nitida) threatened to take out what few peaches there were in the northwest part of MISSOURI in late July, and JAPANESE BEETLE (Popillia japonica) was a problem on peaches and plums in some OHIO orchards.

SHOT-HOLE BORER (Scolytus rugulosus) was prevalent during 1962 in GEORGIA, in devitalized, weak or diseased trees in neglected orchards and in orchards with dying trees. There were reports of damage by this insect to healthy trees in Georgia. Localized attacks in parts of peach orchards in SOUTH CAROLINA reflected poor cleanup. Damage in CALIFORNIA varied over the State in cherry, plum and peach. Cultural and some chemical control was required. In NEW MEXICO, moderate to heavy infestations damaged peach trees in Bernalillo, Valencia, Sandoval, Rio Arriba, Santa Fe and San Juan Counties. Shot-hole borer was especially severe on trees in New Mexico that were damaged by a peach tree borer (Synanthedon sp.).

Infestations of MITES in peach orchards in GEORGIA were less than those of 1960 and there were very few cases where controls were required. Mites appeared generally in CALIFORNIA in April and were heaviest from June through August. In some cases on peach, heavy buildups developed after the fruit was harvested. PACIFIC SPIDER MITE (Tetranychus pacificus) was locally heavy on apricots in Hollister area of San Benito County. In NEW MEXICO, T. mcdanieli damaged foliage of peach trees in the Hondo area, Lincoln County, and in Bernalillo, Sandoval, Santa Fe and Rio Arriba Counties. Damage by this mite was severe in Rio Arriba County where infestations were not treated because of the spring freeze which killed fruit.

EUROPEAN RED MITE (Panonychus ulmi) was the most important pest of all fruits in OHIO in 1962. Populations on peaches and plums were the heaviest that have been noted for several years. Dry weather and high temperatures during May apparently caused very high populations by mid-June. Good control was usually obtained by orchardists who recognized the situation and applied extra sprays. European red mite was not well controlled in some southeastern MISSOURI peach orchards, and by midseason it was a serious problem there. In CALIFORNIA, infestations were reported on prune in Sonoma, Humboldt, El Dorado, Santa Clara, Mendocino and Santa Barbara Counties. It caused local damage to fruit in OREGON, particularly prunes and late peaches, in the Willamette Valley. This mite was of importance in a few Hood River orchards when spray programs were abbreviated. Infestations on stone fruits in WASHINGTON were little or no problem.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) built up on peaches in MICHIGAN in August, and it threatened peach orchards statewide in MISSOURI from midseason to late season, but it was eliminated successfully in that State in all but a few orchards in the southeast. Two-spotted spider mite caused severe bronzing of peach foliage in the Sedgwick County area of KANSAS during late July and August. The mite was a serious problem in peach orchards from midseason to harvest in OREGON. Populations were observed in tree bole and top situations in early May. Browning and leaf drop was a common symptom in the dry midseason. Chemical control with previously effective materials proved unreliable in many orchards, but the multiple applications of short-residual acaricides prevented serious loss of crop. Two-spotted spider mite and PEACH SILVER MITE (Aculus cornutus), which occur from midsummer on, were definitely a problem in COLORADO, and some of the small size of peach fruit that was present at harvest could be attributed to foliage injury by these two species. Peach silver mite was approximately normal in numbers and/or injury in UTAH in 1962. PLUM RUST MITE (Aculus fockeui) development was delayed 2-3 or more weeks in WASHINGTON. It built up slowly during the cool season, becoming numerous after harvest and causing extensive damage in cherry orchards where postharvest treatments were not applied. In COLORADO, heavy populations of ERIOPHYID MITES were present in the Paonia area of Delta County on cherries, which mainly occurred after harvest and made a postharvest spray necessary.

General Deciduous Fruit Insects

GRASSHOPPERS caused some damage to home orchards in outlying areas of CALIFORNIA, and Melanoplus spp. threatened several young tree plantings early in the season in ILLINOIS but, with sufficient warning, little damage was observed following control attempts in the latter State.

In general, THRIPS were extremely abundant on both cultivated and wild host plants in CALIFORNIA. Frankliniella occidentalis was present from spring through the summer in varied populations from light to heavy. Because of the occurrence on native plants, truck crops and ornamentals, light populations were present on most fruit trees. Damage was not as severe in California as it has been in past years.

PERIODICAL CICADA caused moderate damage to apples in an orchard in St. Marys County, MARYLAND, and appeared in the general areas predicted in VIRGINIA. A total of 35 Virginia counties were infested, and damage caused by oviposition was conspicuous in some sections.

SAN JOSE SCALE (Aspidiotus perniciosus) is building up in many Jackson County, OREGON, orchards. Control appears directly related to the adequacy of coverage. Tall trees are the most susceptible. Treetops harbor reservoirs of infestations. A few orchards have as high as 70 percent of the fruit infested, but the bulk of orchards average about one percent of fruit damage. San Jose scale continued a problem in orchards throughout NEW MEXICO, especially where trees were neglected and control measures not used. San Jose scale is of general occurrence in CALIFORNIA on deciduous fruits and many ornamentals. In areas where control practices were not followed, local, heavy infestations developed. The scale insect seems to have increased slightly over 1961 in KANSAS, although infestations remain light.

PACIFIC FLATHEADED BORER (Chrysobothris mali) caused considerable damage to deciduous fruit trees over CALIFORNIA; young trees suffered considerably. The borer continues to attack young fruit tree plantings in OREGON. Girdling damage to a La Grande, Union County, cherry orchard was reported. A SCARAB (Cotinus texana) damaged deciduous fruit in local areas in San Diego County, CALIFORNIA, and occasionally in Riverside County, same State.

MITES in general began showing in April in CALIFORNIA, although they were present earlier, but remained static. Populations developed on most deciduous fruit trees. Populations were heaviest from June through August and were only spotted from then on. Light populations of a FRUIT-TREE MITE (Bryobia rubrioculus) occurred on deciduous fruit trees in several locations over California, with an occasional heavy infestation noted. This same mite caused less than normal orchard damage in UTAH and damaged foliage of fruit trees throughout NEW MEXICO. It was especially heavy in untreated orchards in the latter State. In OREGON, a SPIDER MITE (Tetranychus mcdanieli) was a problem on all fruit trees in the Milton-Freewater area, with damage intensifying as temperatures rose. Low dosages, poor coverage and possible resistance were believed contributing to infestations. Unspecified SPIDER MITES were among the most numerous fruit pests in NEVADA generally. In MARYLAND, populations of spider mites ranged light to heavy in many orchards in the Hancock area of Washington County, and summer applications of acaricides were required to prevent damage. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was extremely prevalent in most areas of CALIFORNIA where practically no fruit escaped attack, but the effects were not so drastic as in 1961. Populations of this mite in OHIO were heavier on all fruit trees than for several years. Two-spotted spider mite and Tetranychus mcdanieli appeared a week or two later than usual in UTAH orchards, but caused normal damage, often severe. FOUR-SPOTTED SPIDER MITE (T. canadensis) required control measures in some ILLINOIS orchards in late May. This species normally appears in late May in large enough numbers to warrant controls in Illinois.

FALL WEBWORM (*Hyphantria cunea*) was more prevalent than usual in 1962 in OHIO, particularly in the northeast. It caused severe defoliation of all fruit trees in the eastern half of OKLAHOMA. First activity was noted in late June and continued into late September. Fall webworm was a minor problem on fruit trees in NEW MEXICO in 1962.

Nut Crop Insects

Highlights:

FALL WEBWORM caused severe defoliation of nut trees in eastern Oklahoma, and populations were heavier than in 1961 in Texas. Heavy defoliation was also reported in north Florida and south Georgia. PECAN NUT CASEBEARER caused heavy losses to the light pecan crop in Texas, and this species and PECAN LEAF CASEBEARER reduced the already short crop of pecans rather seriously in southern and central Alabama. BLACK-MARGINED APHID was rather numerous in Arizona and New Mexico; honeydew was noticeable. PECAN PHYLLOXERA appears to be increasing in Oklahoma and Texas. WALNUT HUSK FLY is widespread in California. This was the first year that economic damage has occurred in that State. Walla Walla and Asotin Counties, Washington, were reported infested for the first time.

FALL WEBWORM (*Hyphantria cunea*) infestations were somewhat heavier in TEXAS than in 1961. Average-sized trees in the central third of the State supported up to 10 webs per tree. It was a minor problem on pecans in NEW MEXICO in 1962. Fall webworm caused severe defoliation of nut trees in the eastern half of OKLAHOMA, and caused unsightly webs on walnuts and pecans in KANSAS in mid-July. First activity in Oklahoma was noted in late June, and it continued into late September. Pecan and hickory, primarily pecan groves, were heavily defoliated in north FLORIDA and south GEORGIA. Control on private land has been conducted by landowners. Larvae about one week old were observed on pecan at Fort Valley, Georgia, on June 17. The infestation in 1962 was less than that of an average year in that area of the State.

PECAN CARPENTERWORM (*Cossula magnifica*) was locally heavy on pecans in SOUTH CAROLINA, and WALNUT CATERPILLAR (*Datana integerrima*) appeared on pecan in scattered areas over the eastern half of TEXAS. RED-HUMPED CATERPILLAR (*Schizura concinna*) infested walnuts in CALIFORNIA from Fresno County north. Infestations occurred much later in 1962 than in past years. Generally, the pest was very local and damaging to young trees in that State. HICKORY SHUCKWORM (*Laspeyresia caryana*) caused considerable damage to pecans in scattered areas of OKLAHOMA and caused less damage than usual in MISSISSIPPI. CODLING MOTH (*Carpocapsa pomonella*) infestations were general in CALIFORNIA and required controls. FILBERTWORM (*Melissopus latiferreanus*) adults emerged in Lane and Benton Counties, OREGON, on July 12. Control was excellent in Oregon where control recommendations were followed. Filbertworm became a problem in dooryard walnuts in Santa Clara County, CALIFORNIA.

PECAN NUT CASEBEARER (*Acrobasis caryae*) caused moderate damage in scattered areas of the pecan-producing section of OKLAHOMA. The rather light pecan crop in TEXAS suffered heavy losses to this pest. Heavier than usual losses were caused by second-generation larvae in addition to damage by the first generation. Infestations in GEORGIA were light to moderate on pecans. The heaviest infestations of pecan nut casebearer were found in the counties near the Georgia-Florida State line. In ALABAMA, pecan nut casebearer and PECAN LEAF CASEBEARER (*A. juglandis*) reduced the already short crop of pecans rather seriously in the southern and central portions of the State. Infestations of these pests were rather severe, especially in Mobile and Baldwin Counties. Light to moderate infestations of pecan leaf casebearer were present in GEORGIA; however, little defoliation was done as the trees leafed out rapidly. Pecan leaf casebearer was common in many areas of TEXAS, but damage was generally light. Also in Texas, another CASEBEARER (A. caryivorella) damaged walnut tree terminals in Eastland County during June by boring into the shoots and twigs.

A LEAF ROLLER (Archips rosanus) was observed damaging buds in Willamette Valley, OREGON, filbert orchards in mid-April. Infestations were general and heavy. Adults emerged in large numbers from July 5.

BLACK-MARGINED APHID (Monellia costalis) infestations on pecans in ARIZONA were heavy statewide during the summer and fall. Honeydew was a problem to homeowners in many cases. In NEW MEXICO, heavy populations built up on pecan foliage in Mesilla and Pecos Valleys; honeydew was very noticeable. WALNUT APHID (Chromaphis juglandicola) was moderately numerous in 1962 on English and black walnuts in Washington County, UTAH. Approximately normal numbers and/or injury were reported statewide. Medium to heavy populations of walnut aphid occurred in most walnut-growing areas of CALIFORNIA, with some local areas little affected. Infestations occurred from April through September in California. Heavy populations of BLACK PECAN APHID (Myzocallis caryaefoliae) built up on pecan foliage in Mesilla and Pecos Valleys of NEW MEXICO. Honeydew was noticeable. Light infestations of black pecan aphid appeared in early September in north central TEXAS. A FILBERT APHID (Myzocallis coryli) developed slowly in the Willamette Valley, OREGON, filbert orchards until favorable weather in June and July permitted a general increase in populations. Average leaf counts of the species were 25 on May 31, 59 on June 25 and 100 plus on July 7. High temperatures in late July caused a decrease in infestations. Unspecified APHIDS were severely abundant early in the summer on pecans in UTAH, but less numerous in late summer. Filbert aphids and pecan aphids were approximately normal in numbers and/or injury in 1962.

PECAN SPITTLEBUG (Clastoptera achatina) reports on pecan were numerous in SOUTH CAROLINA in areas of heavy rainfall. Moderate infestations of several species of SPITTLEBUGS were reported on pecans in southern GEORGIA.

PECAN PHYLLOXERA (Phylloxera devastatrix) - Light to heavy infestations were common in many areas of OKLAHOMA. Many of the infestations were said to be heavier than in past years. In TEXAS, pecan trees in most areas supported light to heavy infestations. This pest seems to be increasing in prevalence each year in Texas. A COREID BUG (Leptocoris rubrolineatus) infested almonds in Tehama County, CALIFORNIA.

OLIVE SCALE (Parlatoria oleae) was locally medium to heavy in almond orchards in a limited number of CALIFORNIA counties. Biological control has been very effective, and parasite liberation by the University of California is continuous in many areas. Also in California, medium populations of a SOFT SCALE INSECT (Lecanium pruinosum) developed in walnuts in southern Fresno County. This scale insect has become quite limited and local in occurrence in the State. The same species of scale insect, L. pruinosum, infested many Douglas County, OREGON, walnut orchards.

EUROPEAN EARWIG (Forficula auricularia) was a general pest in most of northern CALIFORNIA. It was generally a nuisance, but damaging walnut fruit in the husk in Calaveras County.

PECAN WEEVIL (Curculio caryae) activity was noted in the Denton, Denton County, and Comanche, Comanche County, areas of TEXAS in early September, with considerable nut damage evident. The light set of the pecan crop in SOUTH CAROLINA, probably the lowest ever experienced, may reduce the carryover of this species and other insects. In TEXAS, larvae of a WEEVIL (Conotrachelus sp.) were found in abundance in Hamilton County during May boring into pecan shoots and twigs. SHOT-HOLE BORER (Scolytus rugulosus) damage to almonds in CALIFORNIA varied.

Cultural and some chemical controls were required. APPLE TWIG BORER (Amphicerus bicaudatus) damaged pecan twigs in the Plainview area of Hale County, TEXAS, by feeding on growth just above the buds and in the axils. PACIFIC FLATHEADED BORER (Chrysobothris mali) continues to attack young nut tree plantings in OREGON. Girdling damage to a Washington County filbert orchard was reported.

ELM SAWFLY (Cimbex americana) was a problem on pecan trees in several south central TEXAS counties, and larvae of undetermined SAWFLIES damaged pecan foliage in east central and north central areas of the same State. Infestations of the latter were light to moderate.

WALNUT HUSK FLY (Rhagoletis completa) is now widespread within CALIFORNIA. This was the first year that economic damage has occurred in walnuts in the northern part of the State. In WASHINGTON, new county records were obtained for Walla Walla and Asotin. Numbers and/or injury in UTAH were approximately normal for 1962. Trap collections of a WALNUT HUSK FLY (Rhagoletis suavis) in OHIO indicated that adults were more numerous in 1962 than in 1961.

In CALIFORNIA, MITES in general began showing up in April although they were present earlier but remained static. Populations developed on almonds and walnuts. Populations were heaviest from June through August and were only spotted from then on. In some cases, heavy buildups developed on almonds after the fruit was harvested. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was extremely prevalent in most areas of California. Practically no nut crop escaped. The effects were not so drastic as in 1961. Infestations of EUROPEAN RED MITE (Panonychus ulmi) were reported on walnut in Sonoma, Humboldt, El Dorado, Santa Clara, Mendocino and Santa Barbara Counties, California. A FRUIT-TREE MITE (Bryobia rubrioculus)occurred on almonds in California, with the heavier populations usually later in the year. Undetermined MITES caused noticeable defoliation of pecan trees in several areas of TEXAS during August and early September.

PECAN INSECTS were not unusually troublesome in any area of LOUISIANA in 1962.

Grape Insects

Highlights:

GRAPE ROOT BORER was again very destructive in Missouri. WESTERN GRAPE LEAF SKELETONIZER was found in two new areas of California in 1962, and GRAPE LEAF SKELETONIZER heavily damaged grapevines over large areas of central and east central Texas. WHITEFLIES were serious on grape in Indiana and GRAPE SCALE continues a problem in Arkansas. A LEAFHOPPER became severe on grape in a few local areas of California; considerable treatments were used.

GRAPE ROOT BORER (Vitacea polistiformis) again was very destructive in MISSOURI, particularly during the drought period from July to September. In DELAWARE, very heavy infestations were present in one or two old vineyards and in greenhouse grapes in New Castle County. EIGHT-SPOTTED FORESTER (Alypia octomaculata) damaged grapevines in Guadalupe County, TEXAS; and CUTWORMS damaged grape plantings in several locations of CALIFORNIA.

GRAPE BERRY MOTH (Paralobesia viteana) populations in MICHIGAN were noticeably lower than in recent years. Low populations were also noted in the grape-growing areas of PENNSYLVANIA, near Erie in Erie County. It was reported on grapes at Nauvoo, Hancock County, ILLINOIS, but was controlled. Grape berry moth was not severe in MISSOURI, and lighter than in 1961 in ARKANSAS. It was of little economic importance in OHIO vineyards receiving normal, recommended spray schedule. Grape berry moth was present in SOUTH CAROLINA, but only a minor factor on grapes. Numbers in UTAH were about normal for the year.

GRAPE LEAF FOLDER (Desmia funeralis) was locally light in grape-growing areas of CALIFORNIA. However, some heavy infestations developed in grapes in Stanislaus County. RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) required extra control measures in PENNSYLVANIA; very few specimens were noted at harvesttime in the grape-growing area near Erie, Erie County. A GRAPE LEAF MINER (Phyllocnistis vitigenella) was found on cultivated grapes in New Castle County, DELAWARE. A new State record.

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) populations were light to medium on grapes in Escondido, San Diego County, CALIFORNIA. Two new areas of the State became infested in 1962; one in Kerman, Fresno County, and one in Livermore, Alameda County. The Fresno and Alameda County infestations are receiving eradicative treatment as no infestations have been found in commercial grape vineyards. Infestations in NEVADA were greatly reduced in the original infested area, but this pest spread to other areas of Las Vegas and to North Las Vegas, Clark County. Injury in Washington County, UTAH, was very light in 1962. The pest was below normal in numbers and importance in Utah during the year. GRAPE LEAF SKELETONIZER (H. americana) heavily infested grapes at one locality in Pittsylvania County, VIRGINIA, and the species heavily damaged domestic and wild grapevines over large areas of central and east central TEXAS.

A LEAF BEETLE (Glyptoscelis squamulata) caused some damage to grape plantings in local areas of Riverside County, CALIFORNIA, and generally in Madera County, same State. Occurrence of this beetle is quite varied in California.

GRAPE CANE GALL MAKER (Ampeloglypter sesostris) was almost absent from INDIANA after three years of heavy attacks in some vineyards. Another species of the same genus, A. ater, was slightly more prevalent during 1962 in OHIO, but in no instances was there any appreciable loss. A. ater infested grape canes locally in Halifax County, VIRGINIA, and one moderate infestation of the species was found in a neglected vineyard in PENNSYLVANIA. In WASHINGTON, Brachyrhinus rugosostriatus was recovered under concord grape trellis in Benton County, but this species is less than one percent of the Brachyrhinus spp. population in the lower Yakima Valley of Washington.

JAPANESE BEETLE (Popillia japonica) adults were slightly more prevalent than in 1961 in OHIO, but there was no instance of any appreciable commercial loss to grapes. GREEN JUNE BEETLE (Cotinis nitida) adults were much less numerous on grapes in SOUTH CAROLINA than in past years. This may be a result of natural control and climatic factors such as drought during the emergence period. In CALIFORNIA, heavy populations of DARKLING BEETLES (Blapstinus spp.) damaged grapes in the Rutherford area of Napa County.

Medium populations of a PLANT BUG (Largus convivus) developed on grapevines in the southern part of Yuba City, Sutter County, CALIFORNIA. WHITEFLIES were serious on grape in southern INDIANA. GRAPE SCALE (Aspidiotus uvae) was prevalent in a grape planting in Prince Georges County, MARYLAND, and infestations continue to be a problem in ARKANSAS. Populations of a LEAFHOPPER (Erythroneura sp.) occurred in most grape-growing areas of CALIFORNIA, and it became severe in a few local areas of that State. Considerable treatments were used to control infestations. Unspecified LEAFHOPPERS were present in untreated vineyards in SOUTH CAROLINA. MEALYBUGS were present on grapes in local areas of CALIFORNIA; dooryard plantings were quite frequently reported infested. GRAPE MEALYBUG (Pseudococcus maritimus) was light in grape vineyards in CALIFORNIA and was not severe on grape in MISSOURI.

A GALL MIDGE (Cecidomyia viticola) was reported as infesting grapes in five locations in VIRGINIA. A VINEGAR FLY (Drosophila melanogaster) caused some losses in isolated OHIO vineyards due to bird damage and early ripening of grapes. Unspecified VINEGAR FLIES, although heavy, were held in check on grapes in SOUTH CAROLINA by control efforts.

EUROPEAN RED MITE (Panonychus ulmi) caused some bronzing of grape foliage late in the season near Erie, Erie County, PENNSYLVANIA. In CALIFORNIA, PACIFIC SPIDER MITE (Tetranychus pacificus) was light to medium on grape plantings in Napa and Fresno Counties, and Eotetranychus willamettei infested grape vineyards in Fresno, Stanislaus and Amador Counties. Heavy populations of this latter species of spider mite developed in most areas of California.

Blueberry, Cranberry, Currant and Gooseberry Insects

New infestations of BLUEBERRY THRIPS (Frankliniella vaccinii) were reported in several areas of Washington County, MAINE. This pest has been increasing in numbers for the past three years in that Maine county.

An undetermined species of CLEARWING MOTH was found infesting blueberry plantings in western MICHIGAN. Some plantations showed as much as 60 percent infestation by this previously unknown pest. BLACK-HEADED FIREWORM (Rhopobota naevana) was less abundant on cranberries in MASSACHUSETTS than for many years. A BLUEBERRY TIP BORER (Hendecaneura shawiana) is common in the more sandy blueberry sites in southwestern MICHIGAN, and the species was more damaging in OHIO than in previous years. An olethreutid, tentatively identified as H. shawiana, appeared in an experimental planting at Carbondale, ILLINOIS, but only light damage occurred. CRANBERRY FRUITWORM (Acrobasis vaccinii) was much less destructive than normal in MASSACHUSETTS, but some late infestations developed. ORANGE TORTRIX (Argyrotaenia citrana) was light to heavy on bushberries in Santa Cruz County, CALIFORNIA. A LEAF BLOTCH MINER (Gracilaria vacciniella) was very prevalent in blueberry plantations in western MICHIGAN in 1962.

A FLEA BEETLE (Altica sylvia) was moderate and reported causing light to moderate damage to blueberries in a few locations of MAINE in early June. BLACK VINE WEEVIL (Brachyrhinus sulcatus) and STRAWBERRY ROOT WEEVIL (B. ovatus) attacked currants and gooseberries in OREGON. Adults appeared in fields in mid-May.

IMPORTED CURRANTWORM (Nematus ribesii) caused heavy defoliation of currants in Fargo area of Cass County, NORTH DAKOTA, and other eastern areas. In MAINE, light numbers of GALL MIDGES, probably Contarinia vaccinii, were reported in Cumberland County, and heavy numbers in Stockton Springs, Waldo County, where damage was light to moderate, respectively.

BLUEBERRY MAGGOT (Rhagoletis pomonella) was less troublesome on blueberries in MASSACHUSETTS than on apples. It was less troublesome than usual in the State because of the drought conditions and cool weather in the southeastern area. Blueberry maggot emergence began on June 27 in the Jonesboro area of Washington County, MAINE, and was essentially completed by July 19 when 99.2 percent of the total flies recovered had emerged. The last adults were taken on July 25 in Maine. Populations appeared to be normal or slightly below normal in most lowbush blueberry-producing areas of the State.

CURRANT FRUIT FLY (Epochra canadensis) control in OREGON was exceptional in the Willamette Valley due to timely insecticide use. In UTAH, approximately normal numbers and/or damage were present in 1962.

Avocado Insects

In CALIFORNIA, an ARMORED SCALE (Aspidiotus lataniae) was generally light in avocados, with a few heavy local infestations in the Poway area of San Diego County. FULLER ROSE BEETLE (Pantomorus godmani) was light on avocado trees in local areas of San Diego County, and GREENHOUSE THRIPS (Heliothrips haemorrhoidalis) was light on coastal avocados in Santa Barbara County. Biological control kept greenhouse thrips populations within bounds. Light to medium populations of AVOCADO BROWN MITE (Oligonychus punicae) developed on coastal avocados in Santa Barbara, Orange and San Diego Counties. Some biological control held the mites down.

Fig Insects

A SCARAB (Cotinis texana) damaged figs in local areas of San Diego County, CALIFORNIA, and occasionally in Riverside County, same State. Of special interest was an infestation of a BARK BEETLE (Pycnarthrum hispidum) on large fig trees in Hidalgo County, TEXAS. This is the first report of this species in Texas.

Citrus Insects

Highlights:

MEDITERRANEAN FRUIT FLY was found for the third time in Florida during the year. As of the end of December 1962, over 483,000 acres were treated. The first infestation in the current campaign was found during June in Miami, Dade County. Subsequent infestations were found in Palm Beach and Broward Counties. The program was believed to be quite successful in that the detection program was instrumental in making it possible with a minimum of time and money.

BROWN SOFT SCALE was greatly reduced in Texas, but a heavy and general infestation developed in the San Joaquin Valley of California. BLACK SCALE was at a high level during March in Florida and YELLOW SCALE was a serious problem in about three percent of Florida groves from July through September. FLORIDA RED SCALE and PURPLE SCALE appeared to be well controlled by parasites in the latter State. GLOVER SCALE was at the highest level at any time in 11 years of record at the end of March in Florida, and it continued abundant throughout the year. CHAFF SCALE was also abnormally abundant in Florida.

A GREEN STINK BUG was heavy on citrus in Cameron County, Texas, and CITRUS THRIPS required controls in areas of California and Arizona.

CITRUS RED MITE was active and one of the worst mites on citrus in southern California. It was not a problem in Florida, with infestations in mid-November being the lightest for any November in 12 years of record. TEXAS CITRUS MITE was unusually abundant in Florida and record levels were established. Damage was widespread in that State during the third quarter, but it was serious mainly in young groves. CITRUS RUST MITE was the most important species in Florida during the first quarter, but the mite dropped to the lowest levels in 11 years of record during the second quarter. A PINK CITRUS RUST MITE (Aculus pelekassi) was identified from the United States and Florida for the first time in 1962.

MEDITERRANEAN FRUIT FLY (Ceratitis capitata) was found for the third time in FLORIDA in 1962. The current eradication campaign, which is the third, began on June 8, 1962, with the find of a single adult in a Steiner trap at 1600 N. W. 85th Street, Miami, Dade County. This trap was one of the 8,000 traps operated in Florida since the completion of the second eradication program in November of 1957. The second campaign started in 1956. Certainly this detection program has paid off, with an early discovery before the pest had a chance to become widespread and cause much damage. During the height of the campaign in the summer of 1962, as many as 22,000 traps were in operation. At the completion of the year, 328,115 acres had been sprayed from the air and considerable areas were treated with ground equipment. The approximate cost in 1962, shared by the U. S. Department of Agriculture and Florida Department of Agriculture, was one million dollars. The last find for the year was November 2 at Pompano Beach, Broward County. Only Dade, Palm Beach and Broward Counties were found infested in 1962. No Mediterranean fruit flies were found in Dade County since July 14 and Palm Beach County since August 26. It is believed that the program has been quite successful in Florida in that the detection program was instrumental in making it possible with a minimum of time and money.

FLORIDA WAX SCALE (Ceroplastes floridensis) was above normal during the first quarter of the year in FLORIDA, but of only minor importance. It continued to be of minor importance the remainder of the year. Also in Florida, Coccus acuminatus was of minor importance, although it was more abundant than normal during the first quarter.

BROWN SOFT SCALE (Coccus hesperidum) populations in TEXAS were greatly reduced following the January freeze, and infestations remained generally light through the summer. However, one of the heaviest and most general infestations in many years developed during 1962 in the San Joaquin Valley, CALIFORNIA, citrus during the summer. Biological control effectively controlled most of the infestations by mid-August. A few local infestations developed in other northern California counties. Also in California, CITRICOLA SCALE (Coccus pseudomagnoliarum) was light on citrus in Fresno County.

PYRIFORM SCALE (Protopulvinaria pyriformis) was at above normal abundance during the first half of the year in FLORIDA citrus, but it was of minor importance.

BLACK SCALE (Saissetia oleae) was generally light on citrus in CALIFORNIA, with an occasional local, medium to heavy population. Control practices were required. In many instances, however, biological control was sufficient. In FLORIDA, the overwintering population of black scale at the end of March was at a higher level than in any prior March despite a marked decrease during the period. It continued at above average abundance throughout the second quarter, being present in 76 percent of the groves on July 1 and still increasing. Heavy infestations occurred in about 23 percent of the groves, but only a portion of these were of concern to growers. Black scale reached a high level peak in late July in Florida. Unlike prior years, the August brood was not decimated rapidly by natural factors and September populations, although unimportant, were at a record high. Populations dropped to near normal abundance in mid-November and below normal by the end of November. The freeze of December 12-14 practically eliminated existing populations.

CALIFORNIA RED SCALE (Aonidiella aurantii) was common on new growth of citrus in the lower Rio Grande Valley of TEXAS, but no serious infestations developed. This scale was probably less than normal in most areas of CALIFORNIA, but well scattered over the State. Several pest control districts are in operation in California to eliminate infestations in commercial citrus-growing areas.

YELLOW SCALE (Aonidiella citrina) was of minor importance during the first half of the year in FLORIDA, but it was above normal in abundance. The persistent, high infestations made it a serious problem during the period July through September in about three percent of Florida groves. Populations continued more prevalent than usual until the December 12, 13 and 14 cold spell. In CALIFORNIA, light to medium populations were present on citrus in Tulare County and light in Glenn County. It was also a local, dooryard citrus pest in a few northern California locations.

FLORIDA RED SCALE (Chrysomphalus aonidum) populations were below average in FLORIDA during the first quarter of the year; less than 2 percent of the groves harbored heavy infestations. The parasitic eulophid (Aphytis holoxanthus) was common in all areas. Although Florida red scale was present in a majority of

Florida groves during the period April-June, this species remained at noninjurious level except in 3 percent of the groves. Populations after mid-July were lighter than in any prior year in Florida due to parasitism by A. holoxanthus. Florida red scale was common on new growth of citrus in the lower Rio Grande Valley of TEXAS, but no serious infestations developed.

PURPLE SCALE (Lepidosaphes beckii) abundance in FLORIDA was similar to that of the past two years during the period January-March. Although present in about 82 percent of the groves, the parasitic eulophid (Aphytis lepidosaphes), destroyed a large percent of the scales; less than two percent of the groves developed important infestations. Purple scale continued present during the second quarter in a majority of the groves, but remained at noninjurious level except in three percent of the Florida groves. A. lepidosaphes held purple scale to unimportant status in nearly all groves during the third and fourth quarters. In CALIFORNIA, trace populations were present in citrus in Orange County. This scale was once a major pest of citrus in the county.

GLOVER SCALE (Lepidosaphes gloverii) increased markedly in FLORIDA and, by the end of March, it had attained the highest population recorded at any time in 11 years of record; 49 percent of the groves were infested, 2 percent moderate to heavy. It continued in high record numbers during the second quarter. Heavy infestations were found in the interior canopy of Florida trees in 8 percent of the groves. Glover scale continued its above average abundance into the third quarter despite a decrease in August and September; it was important in about 5 percent of the groves. Populations continued to be more abundant than normal during the last quarter in Florida until the December freeze. Afterwards, populations were very low.

CHAFF SCALE (Parlatoria pergandii) continued at above average abundance during the first quarter of the year in FLORIDA, increasing slightly during the period; 66 percent of the groves were infested, with two percent moderate to heavy. It was abnormally abundant during the second quarter. About 72 percent of Florida groves harbored this scale, but nearly all infestations were light. Chaff scale continued above average abundance and was important in about five percent of the groves during the period July through September, despite a decrease in August and September. Abundance continued above normal during the last quarter, with some increase noted the last part of October. Numbers were drastically reduced in December, however. In CALIFORNIA, light, local infestations of chaff scale were observed on citrus in the Escondido area of San Diego County. This is the only place it occurs on citrus.

A SNOW SCALE (Unaspis citri) was of minor importance in FLORIDA during the first quarter, but it was above normal abundance. It was one of the few pests that did not decline to lower level by December 31. Also in Florida, an ARMORED SCALE (Pinnaspis strachani) was above normal in abundance during the first half of the year, but it was of minor importance. COTTONY-CUSHION SCALE (Icerya purchasi) was light and spotty on citrus trees in the Rio Grande Valley of TEXAS.

CITRUS MEALYBUG (Pseudococcus citri) infestations occurred in coastal Santa Barbara and San Diego Counties, CALIFORNIA. Biological control was effective in these areas. Unspecified MEALYBUGS were above average in February in FLORIDA and were present in local areas on some CALIFORNIA citrus. Dooryard plantings were quite frequently reported infested in the latter State.

An undetermined APHID occurred in spotted infestations on new growth of freeze-damaged citrus trees during May in Cameron County, TEXAS; and numerous aphid infestations appeared during March in FLORIDA, but few were heavy and the population remained below average. MELON APHID (Aphis gossypii) infestations were generally light on scattered citrus over CALIFORNIA; however, medium populations of SPIREA APHID (A. spiraecola) developed on citrus in Ventura and Fresno Counties, California. Also in California, trace to light populations of BLACK CITRUS APHID (Toxoptera aurantii) developed on citrus in Fresno County.

Heavy populations of a GREEN STINK BUG, probably Nezara viridula , occurred on grapefruit trees in Cameron County, TEXAS. As much as one bushel of damaged fruit was noted under some trees. Also in Texas, a LEAFHOPPER (Homalodisca coagulata) was noted on citrus trees with lush, new growth in Cameron County during May. As many as 20 nymphs and adults were present on small trees. In FLORIDA, WHITEFLIES increased strongly to above average level in March and were again unusually numerous in September.

Infestations of CITRUS THRIPS (Scirtothrips citri) began on CALIFORNIA citrus in April and required control the rest of the year. All California citrus districts were affected. Heaviest populations probably occurred in Tulare County. In ARIZONA, light infestations of citrus thrips were present in Maricopa and Yuma Counties on citrus beginning in late March. The population became high in untreated groves during April. Insecticide treatments were generally very effective.

In CALIFORNIA, FRUIT-TREE LEAF ROLLER (Archips argyrospilus) infested citrus locally in Los Angeles County, ORANGE TORTRIX (Argyrotaenia citrana) was trace to light on citrus in Orange County, a BLASTOBASID MOTH (Holcocera iceryaeella) was trace locally in oranges in Santa Ana area of Orange County, and medium larval infestations of a SWALLOWTAIL BUTTERFLY (Papilio zelicaon) occurred in young citrus plantings in Tulare County.

FULLER ROSE BEETLE (Pantomorus godmani) infestations were light on citrus in local areas of San Diego County, CALIFORNIA, and GRASSHOPPERS became unusually numerous in FLORIDA citrus groves in September.

CITRUS RED MITE (Panonychus citri) was active and one of the worst mites on citrus in the southern part of CALIFORNIA. Treatment kept the mites to a general light to medium condition. Occasionally, heavy populations developed. All citrus areas in California from Santa Barbara to San Diego Counties were affected. In FLORIDA, this species continued at the record low level, during the first quarter, that had existed since October 1961. Only scattered groves had troublesome infestations. It dropped to the lowest level in 11 years of record during the second quarter and developed important infestations in scattered groves only. Citrus red mite continued generally low throughout the third and fourth quarters in Florida. Infestations in mid-November were lighter and less numerous than in any November in 12 years of record.

SIX-SPOTTED MITE (Eotetranychus sexmaculatus) was scarce during the first quarter in FLORIDA and continued at a low level the remainder of the year. In CALIFORNIA, trace populations developed on citrus in the Irvin area of Orange County. YUMA SPIDER MITE (Eotetranychus yumensis) was light on citrus during the summer and fall in Yuma County, ARIZONA. Another SPIDER MITE (Eotetranychus lewisi)developed to trace numbers on citrus in the northern part of Orange County, CALIFORNIA.

TEXAS CITRUS MITE (Eutetranychus banksi) became more abundant during March in FLORIDA than in prior years, but the population was only slightly above the low level typical of this first quarter. This species became present in more groves (75 percent) during the second quarter, and more groves had moderate to heavy infestations (55 percent) than in any prior year. Damage was widespread in Florida, but it was serious mainly in young groves. During the period July through September, Texas citrus mite continued the previous pattern of being more abundant than in any prior year. The peak level persisted through July, dropped to the yearly low in mid-September, which was above average, and then started the gradual autumn buildup. The population at the end of November was the highest on record for that month, and the trend continued into December when record levels were established prior to the freeze.

CITRUS RUST MITE (Phyllocoptruta oleivora)was the most important species in FLORIDA during the first quarter of 1962 when pest problems generally were below average throughout the State. This species was present in economic numbers in 34 percent of the groves compared with a norm of 39 percent; infestations were lighter than normal. During the period April through June, citrus rust mite dropped to the lowest levels in 11 years of record; important infestations developed only in a few scattered Florida groves. This April through June period was also characterized by very low populations of the major citrus pests. Localized areas developed troublesome infestations, but for the State as a whole, growers had fewer pest problems than usual. Control measures were very effective. Populations of citrus rust mite remained much below average until the summer peak in mid-August, when this species reached average levels. Infestations on fruit remained high and destructive through September, but leaf infestations declined to low levels. A general decrease began in October and, by mid-November, populations were below normal throughout the State for the time of year. Populations continued below normal for the remainder of the year. In CALIFORNIA, citrus on coastal Santa Barbara County required treatment for this pest during the summer to keep populations to a light level.

CITRUS BUD MITE (*Aceria sheldoni*) populations were light to medium on citrus from March to September in Santa Barbara County, CALIFORNIA, and medium on lemons in the Escondido area of San Diego County and in Orange County, same State.

A PINK CITRUS RUST MITE (*Aculus pelekassi*) was found for the first time in the United States at Orlando, Orange County, FLORIDA, sometime in 1961 by Dr. A. K. Burditt and identified in March 1962 by H. H. Keifer. It was described in 1958 from specimens taken in Greece and has since been recorded in several countries. In Florida, it has been collected on Mandarin oranges, Murcott orange seedlings and loose-skin oranges. It is presently known from the following Florida counties: Alachua, Baker, Citrus, Lake, Marion, Orange, Pinellas, Putnam, Seminole and Volusia. Since it is so widespread in Florida, eradication is impractical and quarantines are established with a spray schedule and reinspections made before the infested plants can be moved.

CITRUS FLAT MITE (*Brevipalpus lewisi*) was present in light numbers during the summer and fall in Yuma County, ARIZONA, citrus. Light infestations were also present on citrus in Maricopa County, Arizona, and *Brevipalpus* sp. was above normal abundance during the period April through June in FLORIDA.

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